

# CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society  
Of America

Vol. XXVII MAY-JUNE, 1955 No. 3



FIG. 38. "Macrophoto" showing variable  
surface in leaf of *Crassula deceptrix*.  
See page 75.



## CACTUS AND SUCCULENT JOURNAL

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## FROM THE PRESIDENT'S DESK

Now that spring has arrived and we can get out in our gardens and see the marvelous new work that Mother Nature is doing to and for our plants, we begin to feel that there is much of interest that can and should be done by us to get the most out of our love of cacti and the other succulents.

Spring has also brought the realization to all of us, that the time for another Convention is drawing near and we must be planning to be on hand to take part in the many facets of the Convention. This Convention held from July 8th to 12th inclusive will, I feel sure, prove to be one of the most interesting and enjoyable that the Society has yet held.

In addition to a number of fine speakers who know the cacti very well, we have planned interesting and enjoyable field trips and some other surprises which should be greatly enjoyed by all those who are lucky enough to be able to attend.

As was reported by the Librarian in the last JOURNAL, the Society's Library is now prepared to loan a certain group of books to members who live so far away from the Library that borrowing in person is impossible. In order to take advantage of this new service, write to the Librarian, Mrs. Orva Bokarica, 6014 Piedmont St., Los Angeles 42, Calif., and full information on how to borrow will be sent to you. This has long been one of the aims of the Society and we now feel that we have satisfactorily accomplished our aim.

We are looking forward to meeting and becoming acquainted with many of you members who have never before been able to attend a Convention and to learn of your problems and if possible to be of help to you.

So on to the Convention in July and enjoy meeting others who are interested in your hobby and would like very much to know you. Send your reservation Forms to the Convention Treasurer, Mr. Monte Roberts, 1317 S. Missouri Ave., El Paso, Texas, as early

as possible so you will be assured of the type of reservation you may want.

HOMER G. RUSH, President.

## TWENTIETH ANNIVERSARY COMMEMORATED

On Sunday, May the eighth, at a meeting instigated and conducted by Ted Taylor, the twentieth anniversary of The Southwest Cactus Growers was well attended by around a hundred charter, honorary and regular members, covering the twenty years of meetings.

This study group, founded by Don B. Skinner, later organized as a Club and renamed The Los Angeles Cactus and Succulent Society, was held, originally, at Los Angeles Playgrounds. The anniversary meeting enjoyed the hospitality of Mr. Skinner at the Agriculture Center, Fremont High School, of the Los Angeles city school system.

Among those attending were Charter Members from Tucson and San Francisco, Mr. J. R. Brown, an original Honorary Member, and Mr. Scott Haselton, Editor of the Cactus and Succulent Journal of the National Cactus and Succulent Society, also an Honorary Member.

A feature of the afternoon was the showing of moving pictures of some of the fine Shows this group arranged at Manchester Playground, the pictures in color and presented by Mr. Harry Beam, an original member of the group. A general session of reminiscences was thoroughly enjoyed, the afternoon ending with an abundance of coffee and cake, the latter generously contributed by the ladies of the group, the serving done by Mrs. Mary Glade and her capable committee.

A consensus of opinion called for a repeat of the affair, at least every five years. Mr. Carl Hoffman, always called the political contact, insisted once a year would prove excellent.

MURRAY SKINNER

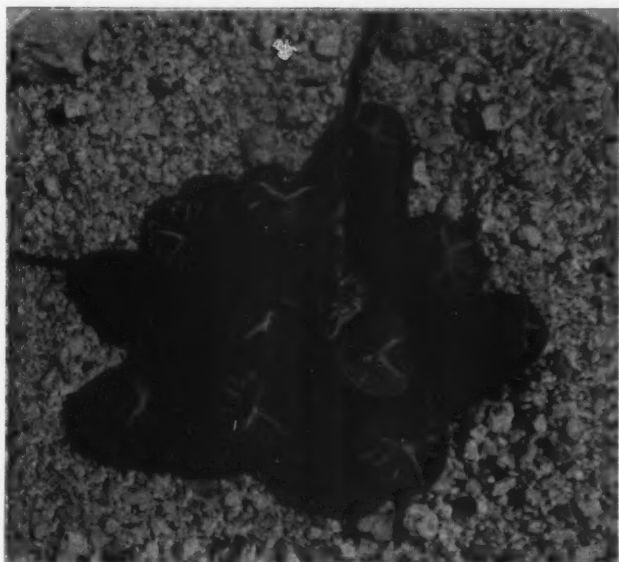


FIG. 39. *Haworthia maughanii* Poelln. nat. size.

## Notes on *Haworthias*

J. R. BROWN

*Haworthia maughanii* Poelln. in Repert. Sp. Nov. XXXI (1932) 85, XLI (1937) 205, XLIV (1938) 239; Herre in Kakteenkunde (1935) 111, fig.; J. R. Brown in Desert Plt. Life IX (1937) 42, fig., XVI (1944) 12, fig.

Plant stemless, with to 10 leaves, spirally arranged, to 3 cm. long, to 1 cm. broad, erect, incurved towards the tip, more or less ovate-oblong with a truncate apex, face of leaf concave and broadly channeled, back very convex, obtusely keeled and somewhat constricted towards the apex, brownish-green, and with very numerous, small, concolorous tubercles towards the apex; the pellucid truncate apex somewhat triangular to somewhat reniform, more or less flat and with very numerous, minute, concolorous tubercles.

Peduncle simple, slender to somewhat stout, to 2 mm. diam., 20 cm. or more in height including raceme; sterile bracts numerous, many towards base of peduncle, subamplexicaul, broadly deltoid-acuminate, 3-5 mm. long with a brown keel; pedicels subsessile, scarcely to 1 mm. long, bracts similar to sterile bracts but with a more pronounced brown keel; perianth 12-14 mm. long, tube obclav., subtrigonus ca. 4 mm. diam. at broadest part, creamy-white

with green lines, segments white with green lines, the lower segments more recurved.

Locality: Cape Province: vicinity of Calitzdorp.

Discovered by H. Maughan Brown, 1932.

*Haworthia maughanii* is closely related to *Haworthia truncata* which was discussed in the last issue of this Journal and has the same way of growing partially below the surface of the ground. The above 2 species comprise the sect. *Fenestratae* which was erected by K. von Poellnitz (Rep. Sp. Nov. XXXI [1932] 86), and the description of this section is as follows: *Plants stemless, leaves distichous or spirally arranged, more or less erect, ovate-deltoid or ovate-oblong, truncate and pellucid at the apex, towards the apex and the apex with numerous small tubercles.*

The first plants of *Haworthia maughanii* seen by the writer were sent over in 1933 by Mr. F. R. Long from Port Elizabeth and one of those old plants in flower is illustrated. Later on Mrs. S. Blackburn was kind enough to send me plants, collected 3 miles south of Calitzdorp with the following remarks: "grows along a gradual slope, also imbedded in stones, sometimes under bushes, exposed to morning sun."

A photograph showing the top of one of the

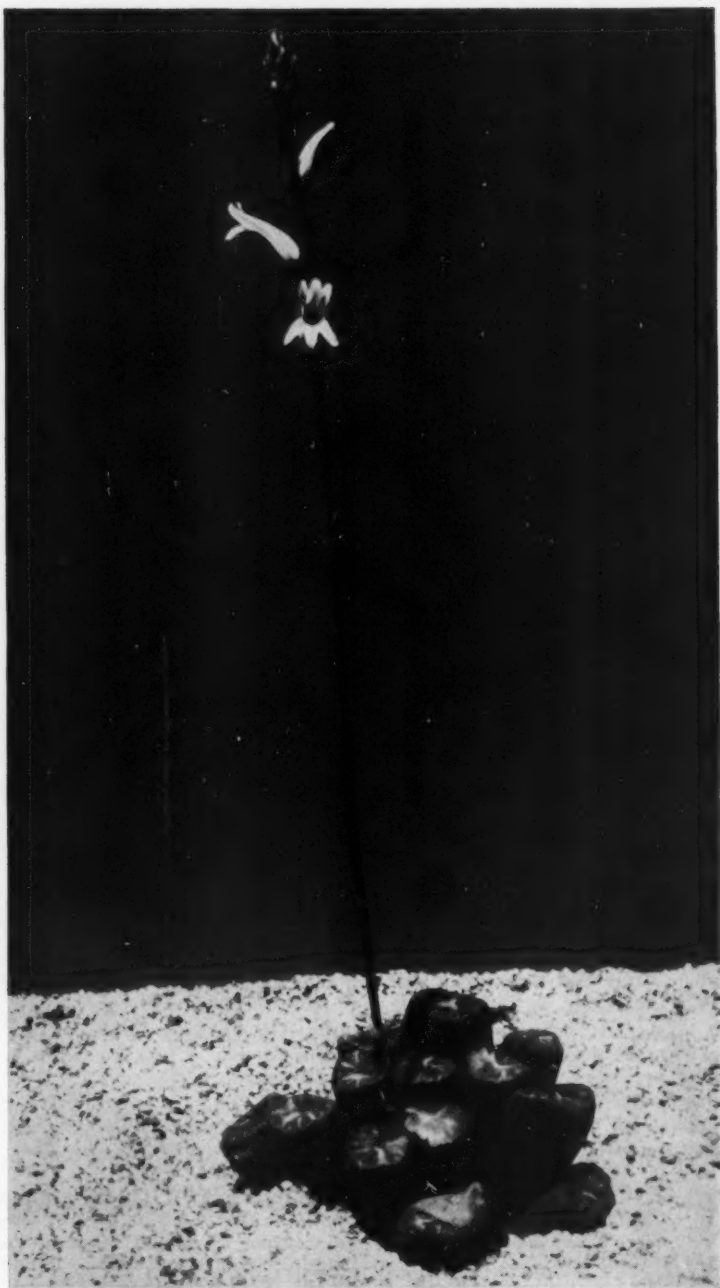


FIG. 40

*Haworthia maughanii* Poelln., nat. size. An old cultivated plant in flower.



FIG. 41

ABOVE: *Haworthia maughanii* Poelln, nat. size. Top view of a recently collected plant.

BELOW: *Haworthia maughanii* Poelln.

Showing the plants in their natural surroundings near Calitzdorp, (photo by H. Herre).

plants collected by Mrs. Blackburn is shown, before cultivation had changed its appearance in any manner. A mature plant in the natural state has about 10 leaves, but in cultivation it may have many more, the old plant shown in flower, had up to 20 leaves, which would seem to be its maximum.

A photograph kindly sent by Mr. H. Herre of Stellenbosch and reproduced here, shows some plants of *Haworthia maughanii* in their natural state in the vicinity of Calitzdorp.

*Haworthia maughanii* may offset sparingly in cultivation, when grown under glass, but is easi-

ly propagated from leaves. The flowering period for *Haworthia truncata* and *H. maughanii* is during July through September in So. California.

Whether *Haworthia maughanii* can be separated into a larger and a smaller form is doubtful and would require more accurate field data to determine. Plants have been received with the name forma *major* but these would all seem to be normal plants and while there is a plant in the author's collection which has retained a much smaller size there is, at the present time, little to support the assumption that there is reason for differentiation.



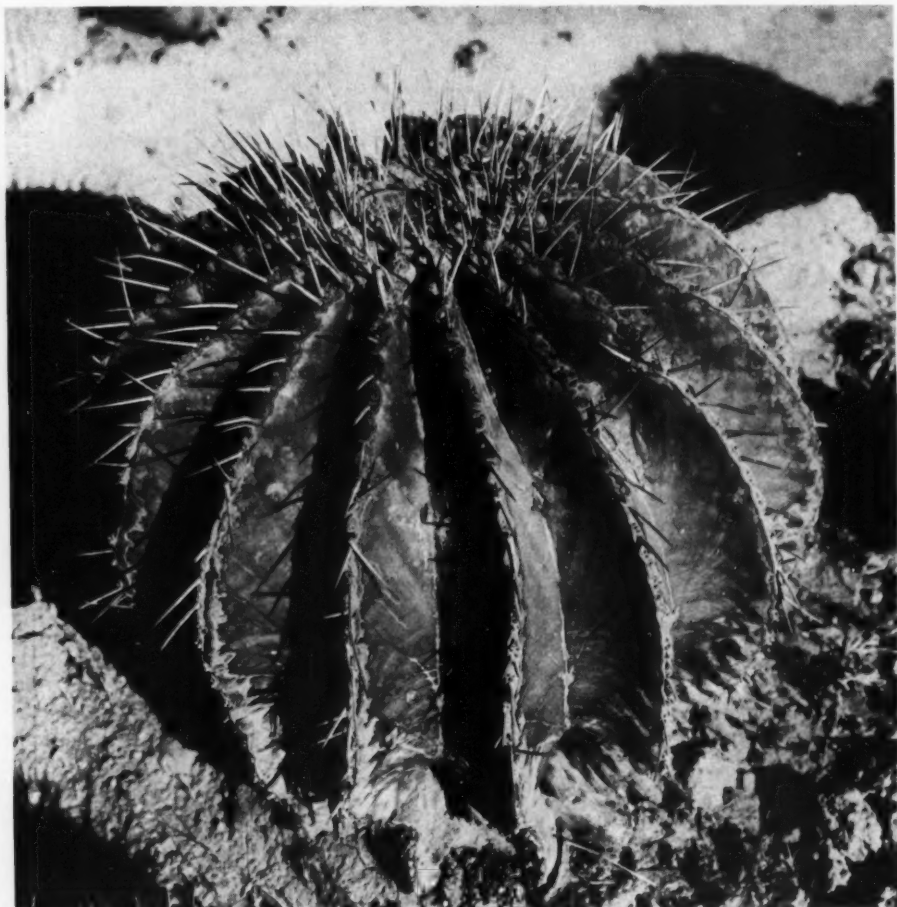


FIG. 42. Mature specimen of *Ferocactus schwarzii*, photographed in Mr. Schwarz collection in San Luis Potosi. Note position of flower buds and curious spines.

## *Ferocactus schwarzii* - A New Species

By GEORGE LINDSAY

Mr. Fritz Schwarz discovered a new and very distinct species of *Ferocactus* in the mountains of northern Sinaloa, Mexico, in 1940. Since then he has had it growing in San Luis Potosi, and has listed it in his catalogues under tentative designation of *Ferocactus schwarzii*. It has been distributed to some European and United States collections under that name, but apparently has not yet been formally described.

I have a plant in my study collection which was obtained from Mr. Schwarz in 1951, but it has not yet flowered. In March of the present year Dr. Ira L. Wiggins and I visited Mr. Schwarz in San Luis Potosi, where we photo-

graphed and drew up descriptions of the new species. The plants were still in the early bud stage, but Mr. Schwarz gave me a color transparency and since then has sent a fresh flower from which flower details were obtained.

### *Ferocactus schwarzii*, sp. nov.

Corpus simplex, globosus demum late ellipticus ad 8 dm. altum et 5 dm. diametro; costis 13-19, acutis, viridibus pallide levibusque; areolis ellipticis vel obovatis, junioribus tomentosis; aculeis de plantis junioribus 4, et de plantis senioribus 1 vel 2; floribus flavis, 4-5 cm. longis, 3.5-4 cm. latis; baccis maturis 1.5 cm. longis, 12 mm. latis; seminibus nigris, reticulatis, 1.5 mm. longis, 1 mm. latis.

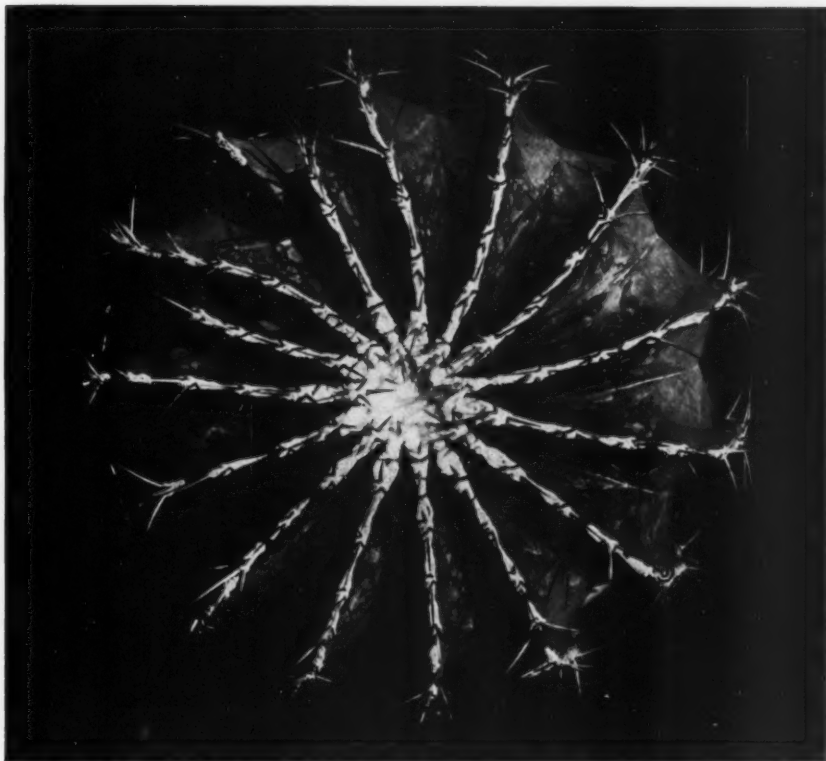


FIG. 43. Young plant of *Ferocactus schwarzii* showing five or more spines to an areole, while mature plants have only one or two.

STEM always simple, from globose to broadly elliptical, tending toward broadly obovoid in maturity, to 8 dm. tall and 5 dm. in diameter, apex very slightly depressed, velvety, 2 to 5 cm. wide. RIBS 13 to 19, acute, perpendicular, 3 to 5.5 cm. deep, pale green, not tuberculate. AREOLES elliptic to obovate, 5 to 12 mm. wide and 11 to 22 mm. long, lanate in youth, the deciduous wool light tan at first, ageing to light or dark gray, the areoles confluent or nearly so. SPINES at first yellow ageing through gray to light horn, very slightly recurved, almost porrect, faintly annulate, plano-convex to terete in cross section, 1.5 to 5.5 cm. long and 1 to 2 mm. broad at base, not differentiated into a central and lateral series, usually 4 in immature plants but sometimes 3 or 5 or more, mature plants bearing 1 to 3 spines per areole, when 2 the lower is slightly recurved and the upper slightly curved upward, with both on the same plane as the rib; nectareous gland spines appearing in flowering areoles, above regular spines and below flower, usually 2 at an areole, usually unevenly placed, later up to 5 may appear, pale

orange, slightly flattened with rounded tip, 1.8 to 2.2 mm. wide, becoming slightly mammillate on drying in age. FLOWERS produced in circle around the apex of the plant, appearing on second areole from the top; buds scaled, the scales ciliate-fimbriate, red with yellow margin; flowers yellow, to 5 cm. long and 4 cm. across when fully opened, scales of ovary grading into outer perianth segments, these yellow with red midstripe, margins slightly ciliate; inner perianth segments clear yellow, about 2 to 2.5 cm. long and 8 mm. wide, tip acuminate, margin slightly ciliate; anthers and stamens yellow; style yellow, 2 cm. long, stigma-lobes about 12 to 20, spreading light yellow. FRUIT when dry 1.5 cm. long and 12 mm. broad, not dehiscent, covered with recurved shield-shaped scales, the withered perianth persisting making total length of dried fruit 3 cm., the walls of the ovary reddish and the dried scales yellow. SEEDS black, reticulate, 1.5 mm. long, 1 mm. wide, 0.6 mm. thick, hilum oval, sunken, white; the seeds in the fruit surrounded by a mass of dried white sugary pulp.



FIG. 44. Flower of *Ferocactus schwarzii*, from a color transparency by Mr. Schwarz.

**TYPE LOCALITY:** Barrancas between El Rancho del Padre and the Rio Sinaloa, in northern Sinaloa, Mexico.

**DISTRIBUTION:** Steep cliffs and mountains of the Barrancas between El Rancho del Padre and the Rio Sinaloa, northern Sinaloa, Mexico.

**TYPE SPECIMEN:** Schwarz s.n., deposited at Dudley Herbarium, Stanford University.

*Ferocactus schwarzii* is related to *Ferocactus echidne*, but a number of differences separate the two species. *Ferocactus echidne* tends to become cespitose but never as large as *F. schwarzii*, has more spines, thinner ribs, and flowers six or eight weeks earlier.

Mr. Schwarz gave the following directions for reaching the type locality of the new species. It is possible to drive to Bacubirito, Sinaloa, via highway Mexico 11 and Sinaloa city. From Bacubirito a small dirt road is followed to Rancho

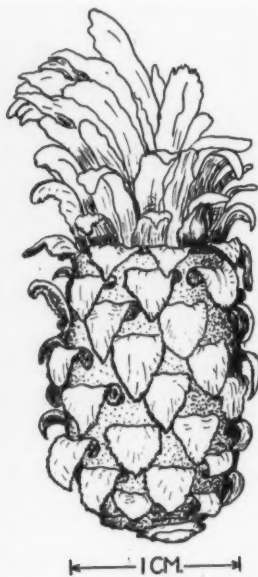


FIG. 45.  
Dried fruit of *Ferocactus schwarzii*.

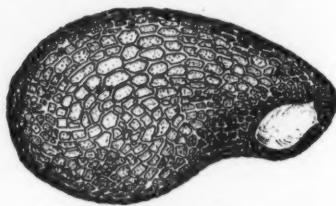


FIG. 46. Seed of *Ferocactus schwarzii*.

El Padre. The rest of the trip must be made with animals, and it is about a day and a half ride to Barrancas where the plants are found growing on rugged cliffs in the rough mountains.

I am happy to be able to name this interesting species for Mr. Fritz Schwarz, whose explorations in Mexico have resulted in the discovery of many novelties and the rediscovery of more.



## An Overlooked Genus of Cactaceae?

By R. S. BYLES

Commercial catalogues listing "new" plant names have always proved something of a nuisance to the taxonomist. The ephemeral nature of such publications, combined with their vast number, at once places them in the same category as the newspaper. It is hardly surprising, therefore, that on and after Jan. 1st, 1953, it is agreed that newspapers and tradesmen's catalogues no longer constitute places of valid publication for new taxa. Even an accompanying Latin diagnosis (as usually required after Jan. 1st, 1935) is not allowed to justify relaxation of this eminently desirable Rule. There remains, however, the problem of the multitude of trade lists published prior to Jan. 1st, 1953. These can never be assessed accurately and on occasion one may even question what actually constitutes a tradesman's list or newspaper. En passant I may mention also that it has been suggested (though in no way acted upon) that new names of plants should NOT be published in the journals of specialist horticultural societies. This I cannot visualize receiving necessary support. It is only reasonable, however, that names for new taxa and their descriptions should be published in those periodicals which can be expected to reach the majority of botanists. In support of the great "cactus societies" I would add that their journals enjoy a far more "effective" circulation than certain institutional periodicals. Whatever the publication, however, there is clear need for SUSTAINED GUARANTEE that copies are deposited in the appropriate libraries.

My preamble leads up to a discovery which arose entirely by accident and directly as a result of extensive literary studies on *Rebutiae* and *Lobiviae* conducted by Mr. John D. Donald. This quite indefatigable worker drew my attention to a much yellowed, certainly not very old, plant dealer's list which had been long sought and eventually found only on the Continent. The writer has now deemed it useful to make photocopies available in this country as well as in America.

The list, a sheet approximately 12" x 18", printed on one side only and headed "Akklimatisations und Versuchs-Garten" (undated, and issued by A. V. Frič of Prague) publishes the following under Item 523: "*Airampoa* Frič g.n. *aurata*, Frič sp. n. Kugel opuntien aus hohen Cordilleren mit widerhakigen Stacheln, aber ohne Glochiden" (globular *Opuntias* from the high Cordilleras with barbed-hooked spines, but without glochids).

"*Airampoa*," derived from a local name for

dwarf cacti, occurs in commercial catalogues at least as early as 1928, but apparently only as a *nomen nudum*. For the following reasons, however, I consider it extremely likely that "*Airampoa*" may have been effectively and validly published as a genus of *Cactaceae*, the Type of which must be taken as *A. aurata* Frič. Whether or not that name may be related to any known plant does not affect the issue under immediate consideration.

- 1) Almost certainly, effective publication was accomplished by distribution of this price list. (We are in no doubt as to nature of the sheet.)
- 2) The place of publication, clearly a tradesman's list, is legitimate as we can prove that it was circulated prior to Jan. 1, 1953 (Art. 39).
- 3) Relative to Article 43, the author definitely states his intention of publishing a new taxon and the above "diagnosis" may be interpreted as an extremely poor generic-specific description.
- 4) The new generic name (*Airampoa*) was accompanied by a modern language description, scant as it may be, but nevertheless technically sufficient to validate if distribution of list took place prior to Jan. 1, 1935. This is almost certainly the case, but the matter is being checked.

Satisfactory settlement of this admittedly academic matter depends upon conclusive proof of *date of distribution* of the list. The text reveals, however, that the printing of the sheet could not have taken place prior to 1932 and suggests strongly that it was at least available for circulation in 1933.

If "*Airampoa*" thus eventually gains recognition as a published generic name, its exhumation cannot be regarded as particularly useful. Concealment of the existence of very obscure, worthless, yet validly published taxa would, however, constitute a breach of good faith. "*Airampoa*" probably merits immediate reburial alongside such other museum pieces as *Haageocactus* Backbg. (not *Haagerocereus*) and *Demnosa* Frič, and on reflection, I find the comparison particularly apt.

Some would suggest that the above is "much ado about nothing." I would be the very first to agree. It does, however, provide a particularly original example of the difficulties which I have attempted to underline in my first paragraph.

In conclusion, it may be added that the vali-

dating descriptions accompanying certain contemporary botanical publications are scarcely

more helpful than the example cited in this paper.

## Trade Catalogues of Succulents

By G. D. ROWLEY

Mr. Byles' untiring delvings in search of lost, stolen or strayed cactus genera make one point clear to all—even to those with no interest in nomenclature or the strange pursuits of botanists in search of eternal truths in the archives of state museums. It is the value of nurserymen's catalogues, and the importance of preserving them intact for future reference. I don't mean just the half-illegible mimeographed sheet that so often nowadays has to pass for a catalogue, but the printed lists which, in the "bad old" pre-war days of cheap printing often ran to 50 pages, with hundreds of photographs and sometimes magnificent colour plates too.

Many plants have been given to the world for the first time via descriptions and pictures in commercial price lists. It is a natural enough thing that a dealer should publicise his wares, and he might have to wait years if he left the describing of every novelty to the botanists. So he coins his own names, adds a note on flower colour or other salient feature, and sits back to await the postal orders and cheques. After all, *Smithocactus browni*ensis Harc. & Niels. is a far better sales draw than *Cereus*? sp. nov. CK/2072, which is what the collector probably called it on entering it in his field notebook. But the botanist frowns upon these informal christenings, and in 1935 inserted a clause in the International Rules of Botanical Nomenclature limiting publication of acceptable new names to more permanent and accessible media, such as books and scientific periodicals.

However, the problem of names created in trade lists prior to 1935 still exists, and no horticultural publication is so ephemeral or difficult to lay hands on. Consider what happens to the average cactus catalogue on reaching the customer. He first goes through it page by page ticking everything (in ink or crayon) that catches his fancy—which usually amounts to 95% of the whole. Copious annotations follow and strings of figures as the financial angles are thrashed out. The catalogue then spends the summer months on the potting shed shelf, where its poor quality paper quickly yellows and gathers dust. But it was sent free, so why bother to look after it like something you had to buy? In winter it is retrieved and any pictures it contains ripped out for the scrapbooks. What remains, if not consigned to the waste paper basket, is not fit for anything else.

There is increasing awareness of the need for the preservation of clean, complete copies of the better printed succulent catalogues, which should be deposited in some reference library or with some permanent body (such as the I.O.S.). Thanks to the help and generosity of Mr. H. M. Roan and Mr. R. K. Byrd and others, I have now got together about 450 of these and find them useful for tying down the dates of introduction of new species and hybrids, for their often useful descriptions, and for the wealth of illustrations in them.

To would-be collectors of catalogues I would urge special attention to one point: the date of issue. Many good lists are marred by lack of a date. Sometimes the year of issue can be inferred from the postmark, the letterpress, or reviews of the list in contemporary periodicals. Sometimes one can only set wide limits from the nomenclature and species listed, and other circumstantial evidence. But this is always laborious and it would be far better if all catalogues were dated by the firms printing them. It is a good plan to pencil on the month and year of receipt of any new plant list, irrespective of whether or not it is already dated.

### POSTAGE STAMPS

There are several postage stamps with pictures of cacti or other succulents. The most interesting is the old-timer of Turks and Caicos Islands showing a "Turk's Head" or *Melocactus*; there are three others differing only in color. There is a stamp showing a fine picture of part of the cactus garden in the Monaco Botanical Garden. Some of the African countries have stamps with the "Prickly Pear" or native succulents, mostly *Euphorbias*. Chile has a 30 cts. stamp showing a hot spring area with columnar cacti in the foreground. An air-mail stamp of Mexico shows what may be *Pachycereus marginatus*. Our own commemorative stamp of the Gadsden Purchase shows many *Carnegiea giganteas*. Ferocacti and *Opuntias* around a covered ox-cart. If some member has a complete collection of all such stamps we would be glad to reproduce them as a group for other members.

W. D. DELONG

### "The Cacti of the United States"

The National Society enjoyed a preview of the setting for a forthcoming book by Dr. Lyman Benson on the Cacti of the United States. A trip through the Santa Ana Botanic Garden at Pomona College, Claremont, California, disclosed the herbarium and live material being assembled to aid Dr. Benson in his work. The comparatively new buildings and the vast acreage of native plants under the direction of Dr. Philip A. Munz at his Santa Ana Botanical Garden is already impressive in the few short years that this garden has been established in this location.

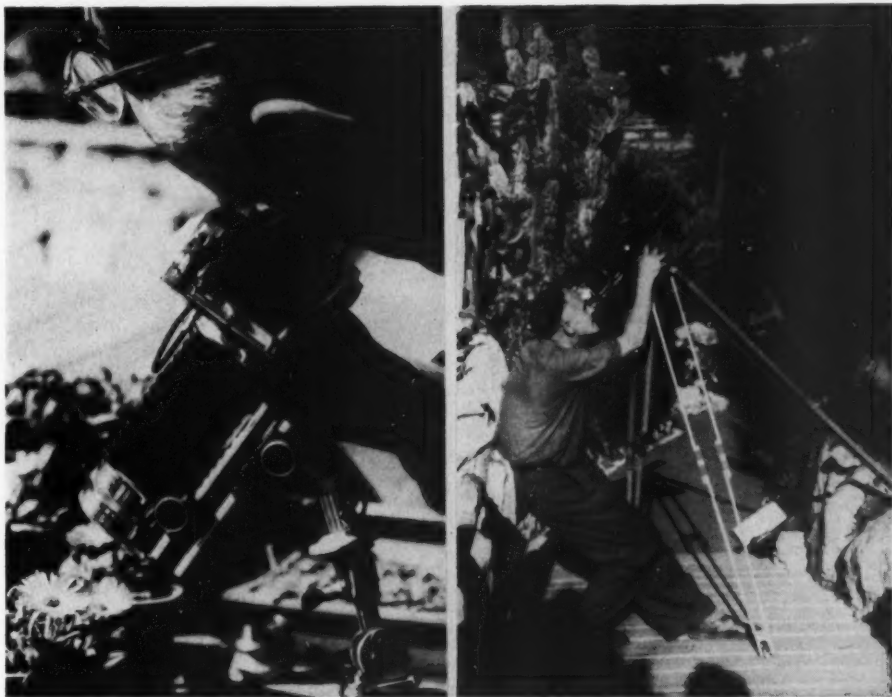


FIG. 47 (left). Short distance macro-photography. The author with the "Novoflex" front lens apparatus. FIG. 48 (right). Making a long distance photo of a *Cereus* flower with a 40 cm. lens and "Novoflex" bellows extension. This is the equivalent of a close-up photo made with the simple Novoflex 10.5 cm. lens. This long distance equipment is useful in distance observation.

## "SUPERPHOTOGRAPHY"

By CURT BACKEBERG

When studying old botanical literature, we are often surprised by the illustrations with the detailed drawings and color-plates. Botanists, at that time, did a very careful work in their diagnoses and there seemed to be time and money for careful drawings—of course photography was not far enough advanced.

The times changed and collectors all over the world found new plant material, especially the other succulents, and it was necessary to publish many new species. During this period much was published but with too few illustrations. For instance in "Flora Capenses," one who is studying the succulent *Crassulas*, or Schoenland's "New Species of *Crassula*" in the Journal of the Linnaen Society (1895-97), feels the lack of good illustrations. Many of the descriptions were made from the Cape Government Herbarium and Dr. Bolus' private herbarium so it was difficult to get good drawings or to publish illustrations which would facilitate identification; authors in other parts of the world who

cannot examine this herbarium material will scarcely be able to do any determination work of recollected material.

In cactology there was a similar situation but the edition of Britton and Rose was an exception. In this important publication the diagnoses were rather short—some extremely short, but the differentiating characteristics were extremely helpful in determination work. I have had the best experience with this method of publishing short diagnoses. It has helped me very often in finding the desired name very quickly. Britton and Rose "The Cactaceae" was also an exception because nearly every species was accompanied with a good illustration to supplement the short diagnosis. But "The Cactaceae" was a very expensive edition which was financed by Carnegie Institution which accounts for the completion of this work.

Then came the many collecting trips, mostly by German collectors. And what happened? There was so much new material that there was

not enough money for publication. There were only the Journals of the amateur societies with limited financial status and available space, so long descriptions and illustrations were impossible.

There have been complaints that the diagnoses of that time were too short but many of these new discoveries would have been forgotten except for the short descriptions. Credit should be given to those societies for their publications at that time and later through the war years with the paper and materials shortages.

Because there were no means or space available I tried to find a systematic method which permitted me in my "Synopsis" (Cactaceae—Systematische Uebersicht und Beschreibungsschlüssel, DKG—1942, Jahrb. No. 1) to fix in categories those characteristics which are always found in a certain plant group so as to avoid repetition in every description. As it was necessary to find a logical systematic basis for all genera of the family, I came to the "reduction

line in shoot-structure of the flower."

When reading the journals of today, one is under the impression that we are now in a better period of publishing but it is due to less new material which permits more detailed descriptions and very good illustrations.

Since Britton and Rose, it has become the custom of the Deutsche Kakteengesellschaft magazine, my own "B.F.K.," and later Craig's "Mammillaria Handbook," to give a photo for every described species. This method has been found most helpful in identifying plants. Today few species are described without a photo of the plant, or a drawing, or both.

Even with the good illustrations of today the requirements have not been completely fulfilled. Even the good photos are secondary to the wonderfully detailed drawings and color-prints of older publications. This leads to what I want to show what can be done with photographs.

Continued on page 82

#### CAPTIONS FOR ILLUSTRATIONS

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FIG. 48 (1). A 10.5 cm. macrophoto showing the diamond-lustre formations on the leaves of *Dorotheanthus bellidiformis*. (2). The 5 cm. supermacro photo of the leaves of the same showing "vegetative diamonds" in the light reflecting translucent, drop-shaped papillae. (3). The beautiful hairy apex of *Crassula interrupta*; macrophotos show the variability of the tubercles, cilia, papillae, hairs, etc., in this group. (4). Transparent, minute, globular papillae of a *Crassula* leaf.

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FIG. 49 (5). *Crassula deceptrix* showing the tubercles. Compare with the cover photo (Fig. 38) which shows the green windows at the top of the tubercles. (6). *Crassula* species showing the variable "designs" of papillose hairs. Such photos describe a plant better than words and this "photomacroscopic method" leads to a more natural grouping of species and forms than a classification by flowers. (7). Apex design is an aid in classification; note the "spot designs" found in so many of the succulents. (8). *Crassula columnaris* has an interesting apex design which is a good characteristic in most species upon which classification is based. It is hardly logical to group some succulents by their flowers and others by their plant form.

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FIG. 50 (9). *Crassula pseudocolumnaris*. A good apex photo often shows the variability of the cilia, etc. (10). Macroscopic view of the dwarf-leaved *Crassula corallina* shows the beauty of the plant which is easily overlooked by its small size. Note the repeated leaf design in the sepals of the flowers. (11). The "cage-like body" as N. E. Brown called it, on the slender erect column, formed by the connate tips of the lobes in the flower of *Ceropegia haygarthii* induced this author to create in his key a separate position for this species. But there is no such cage-like body in this phase of "globule" development. This is only an extra long constriction of the upper part of the flower, *C. distincta*, showing the transitional stage. Thus, both plants can be placed in Schumann's Sect. *Phanantbe* ("tips of corolla connected at the top"). (12). Phase two, 24 hours later, shows that the "globule" has changed to a real "cage" with vibratile hairs and the "windows" have opened.

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FIG. 51 (13). Flower of *Ceropegia sandersonii* showing the basal hairs that cannot possibly retain the insects that pollinate the flower, as some authors believe. If the hairs were in the upper part of the tube, this might be possible. (14). The rugose elongated seeds of *Ceropegia distincta* within the opened fruit; the grains are crowned with the typical Asclepiad tufts of hair that facilitate their dispersal. (15). Normal 40 cm. long distance photo of the top of *Pachycereus pringlei*. This is the form with more campanulate flowers, fewer ribs, confluent areoles with less swelling around them. (16). *P. pringlei* which was named *Cereus calvus* Eng. I place it as a variety of *Pachycereus pringlei*. The areoles are not confluent and are more swollen, there are more ribs, and buds and flowers are more slender.

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FIG. 52 (17). Flowers of *Pachycereus pringlei* photographed at the shortest possible 40 cm. distance focus and about 16 feet from the subject. (18). *P. marginatus* (*Marginatocereus marginatus*—Backeberg) with white flowers. Here is shown the advantage of long distance photography on tall plants. (19). The form called *gemmatus* by Backeberg having smaller and pink flowers. Photo taken at 16 feet from the plant. (20). Comparison of size of flowers of *P. marginatus* and the var. *gemmatus*. *Marginatocereus* was set up for its difference from the other *Pachycerei* in the shape of the flower and the long bristly spines on the whole tube, contrary to the very short ones only on the ovary.

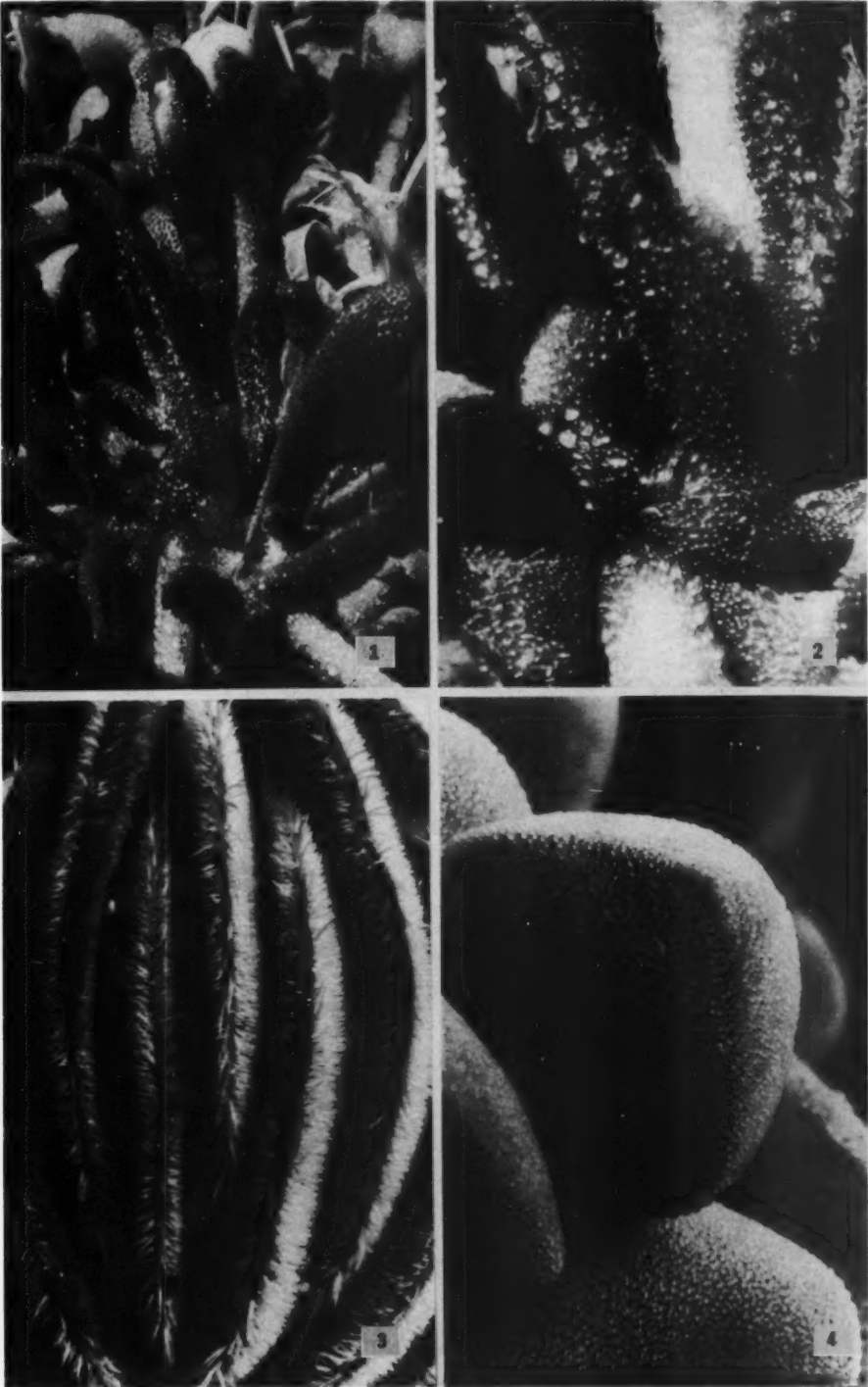


FIG. 48



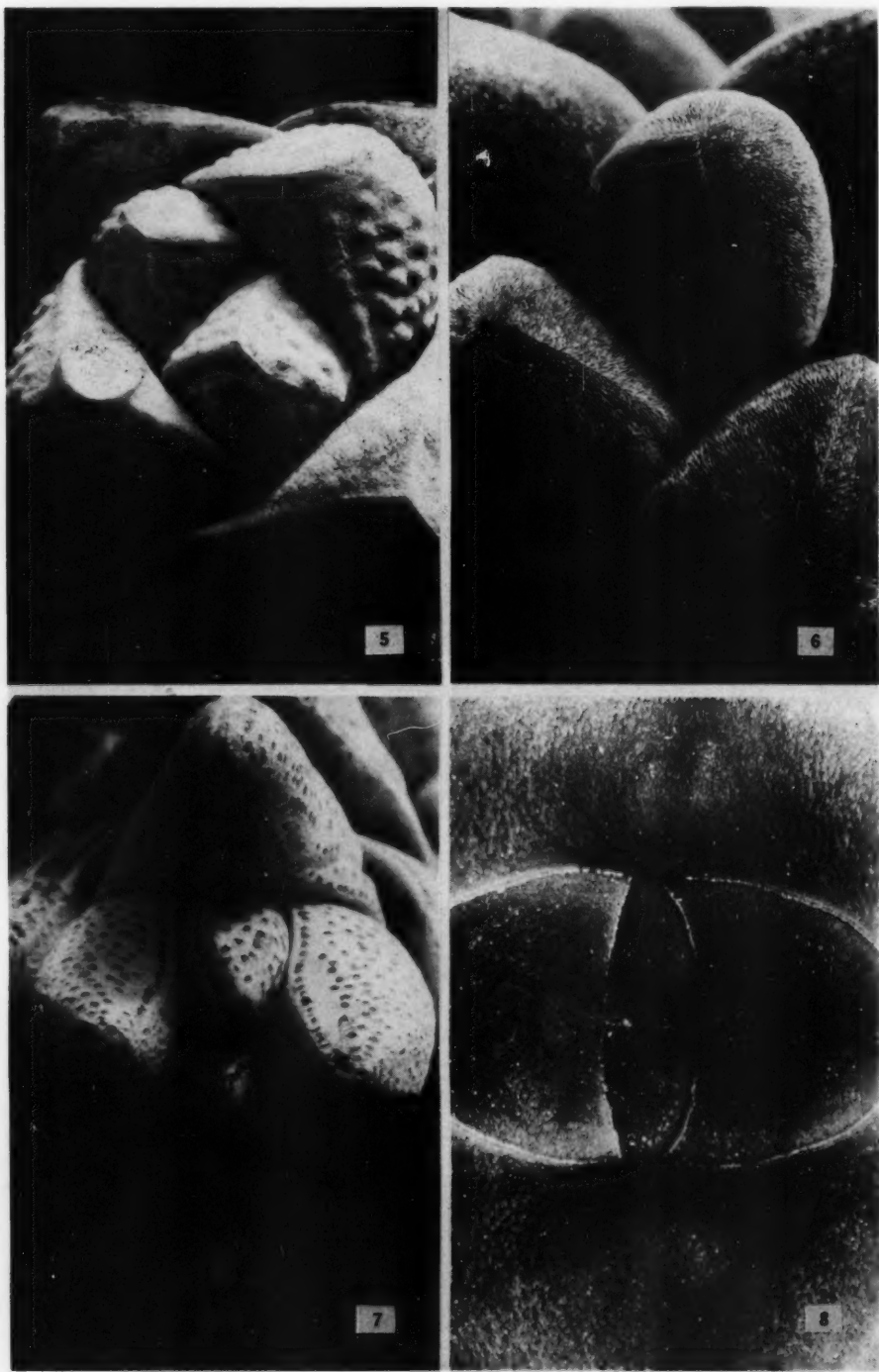


FIG. 49

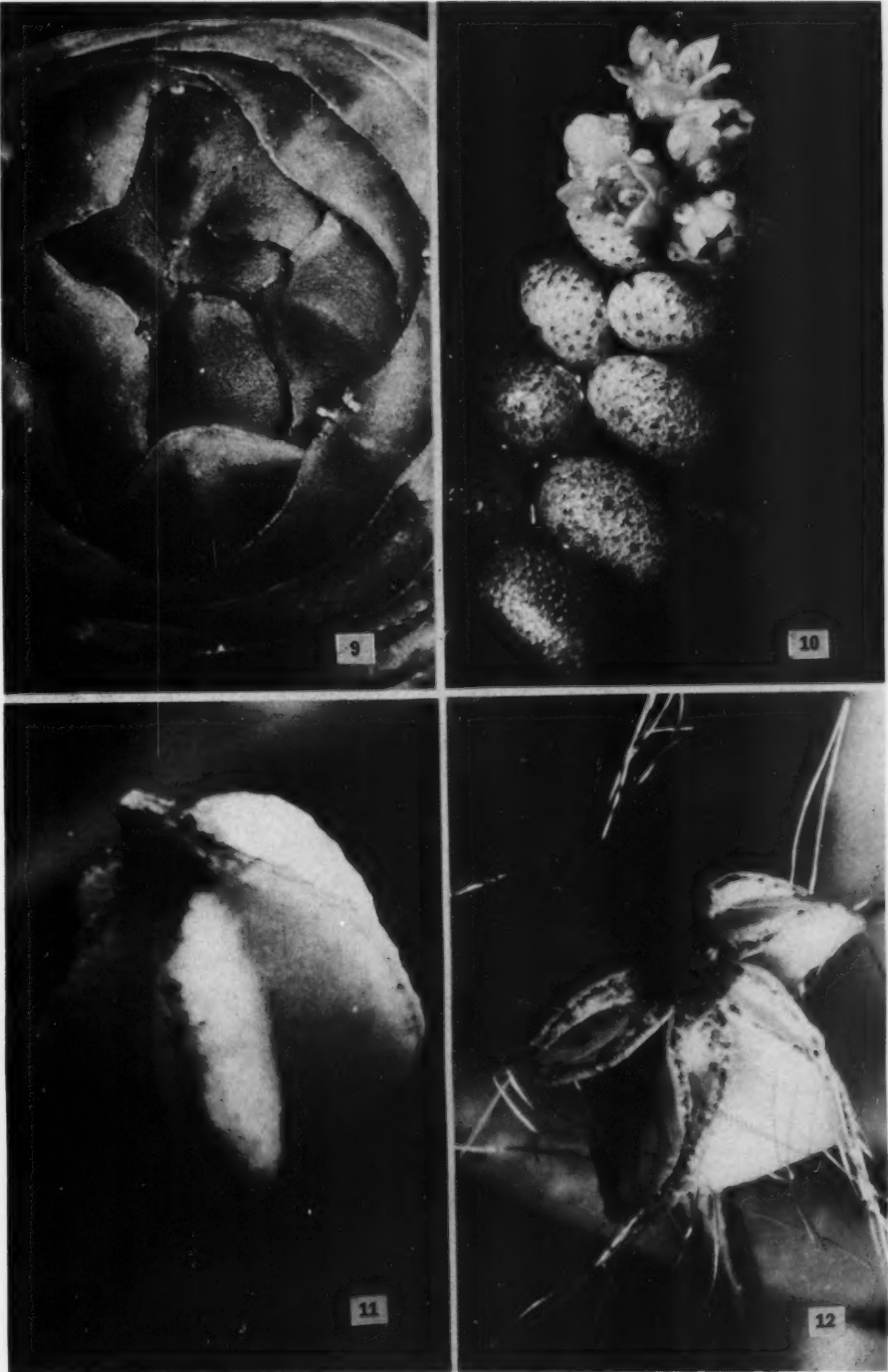


FIG. 50

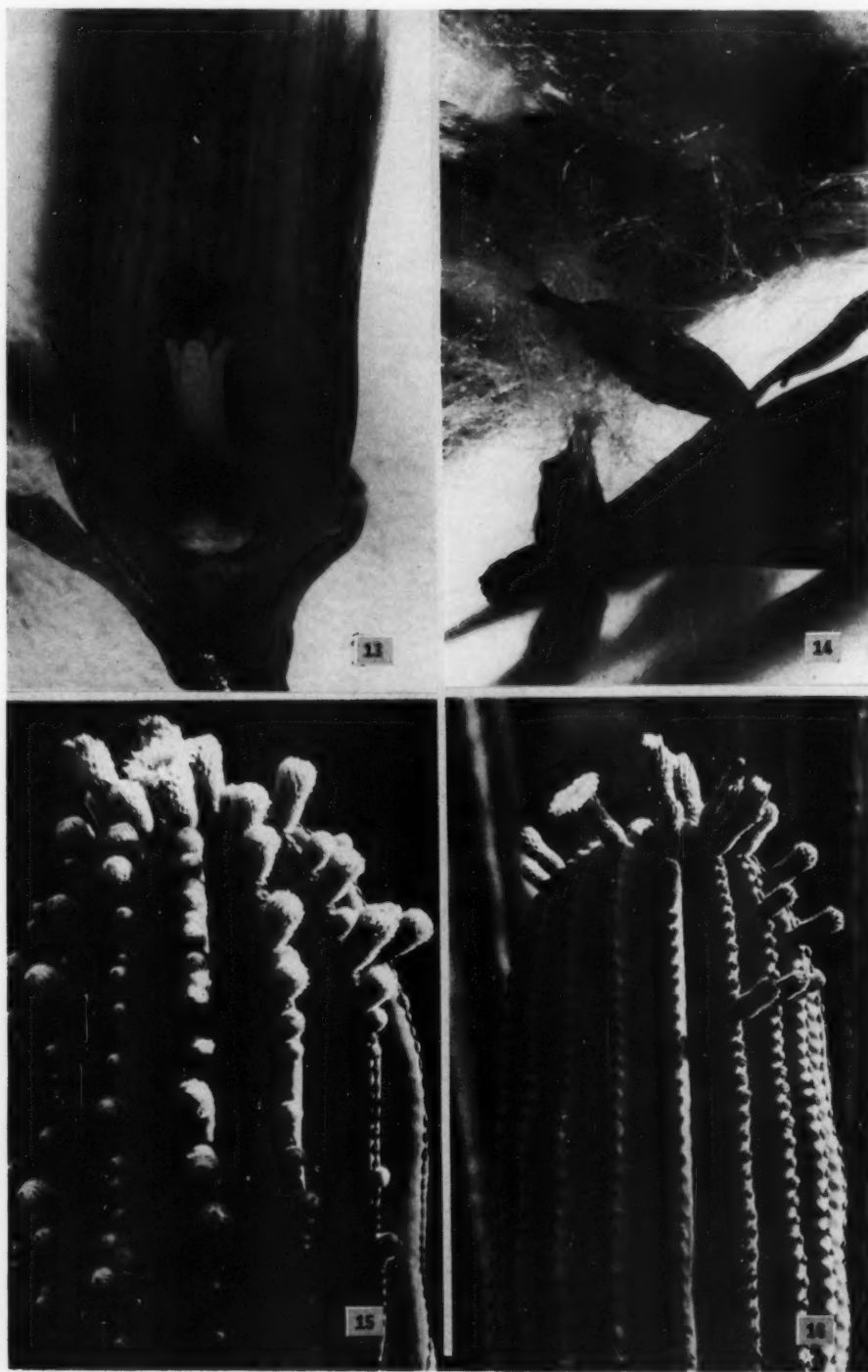


FIG. 51

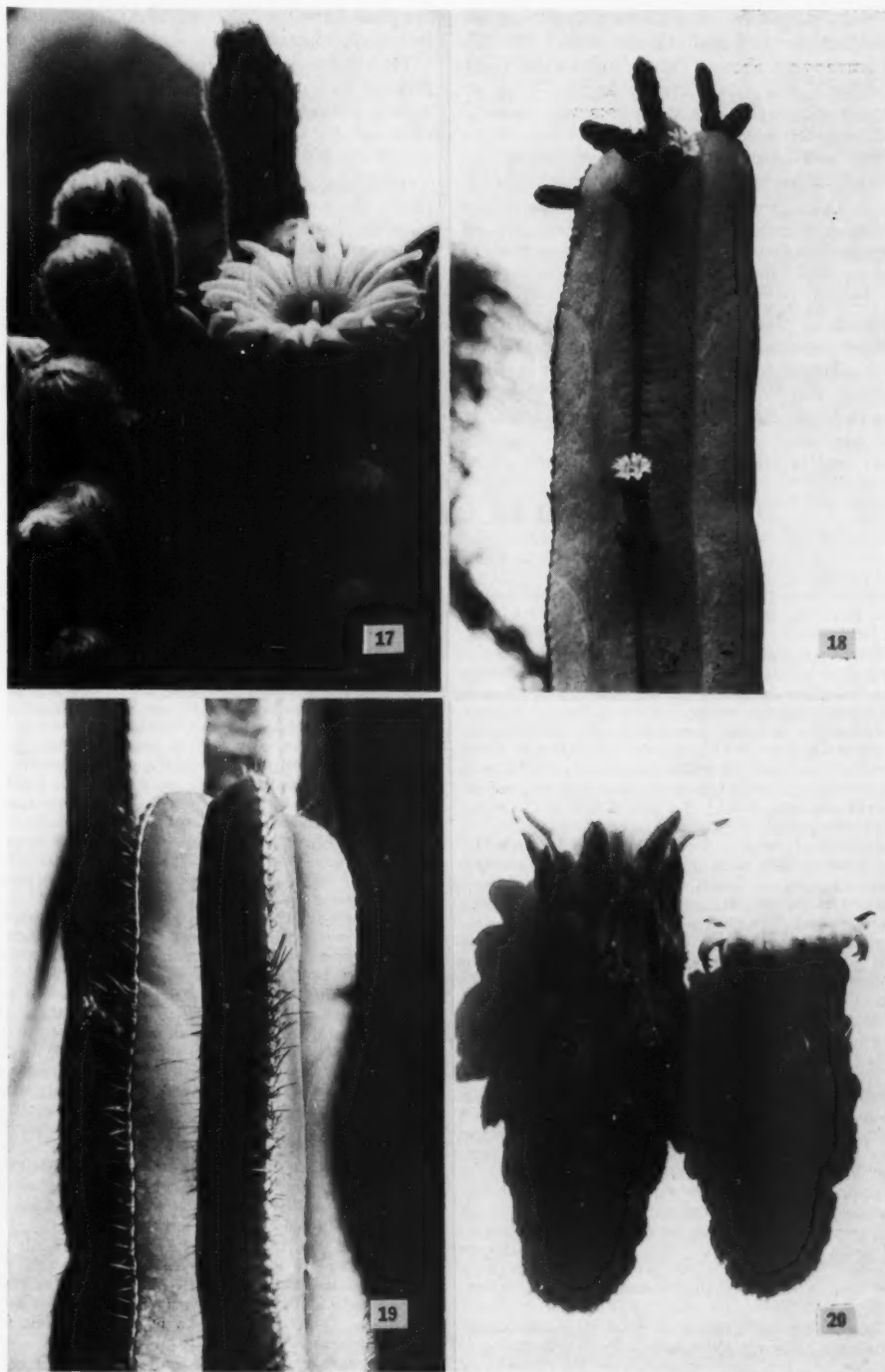


FIG. 52

Many people believe that they know *Crassulas*. But do they really know them? See the accompanying photos. Others believe that many Mexican *Cerei* are sufficiently known. They are not, even many of the most common. There is still a great need for detailed descriptions of flower and plant structure of most all of the species. What can be done to improve descriptions and illustration? We do not have the financial means to pay the high labor costs of minute drawings and hand colored prints of the old authors. Personally I had to do something to record my observations of the enormous amounts of plant material which I had to study.

So I came to what I call "super-photography" as a substitution for the older methods of illustrations and as a clear supplement to the short descriptions. Besides the saving of many words,

the plant is better described when supplemented by a good illustration.

Observation and photography of inaccessible flowers, such as on a high *Cereus*, is done with a long distance 40 cm. lens. Short distance or close-ups are done with a "Novoflex" 10.5 cm. and 5 cm. lens. Sometime I am going through a collection with an empty camera to study the plants through the magnifying lenses. It is astonishing how many new and unknown observations can be made in this manner. "Super-photography" can also show longitudinal section in a most satisfactory manner. The same methods apply to color photography and when supplemented with black and whites, exact, permanent records can be made without any distortion sometimes found in drawings and word descriptions.

## How to Graft Cacti

By LADISLAUS CUTAK

From *Cactus Digest* of the Henry Shaw Cactus Society (\$1 per year, foreign \$1.60. 3339a Virginia Ave., St. Louis, Mo.)

Why is it that the neophyte cactus enthusiast gets so excited about grafted plants? There is no doubt that from the standpoint of the amateur, grafting is the most interesting method of vegetative propagation and nine out of ten persons will have a hankering to try their hand at it. Grafting isn't hard at all. To be sure it is an art, but by no means is it difficult to accomplish. Cactus grafts can be executed successfully even by a teen-age child, if a few simple and essential rules are carefully followed.

First of all, what is grafting and why is it resorted to? Grafting is a fairly simple operation whereby two distinct species are united and induced to grow as one. There are several good reasons why grafting of cacti is encouraged. Usually a weak or slow growing variety is attached to a stronger one in order that the latter will give greater sustenance to the former and cause it to grow more rapidly or produce an abundance of shoots or offsets. The commercial nurseryman finds it profitable to graft as this is one of the fastest means of propagation, so why can't the amateur augment his collection by the same method?

The portions employed to make a grafted plant are commonly known as the stock and scion. The stock, in plain words, is a rooted plant upon which the scion will depend for its existence, and although it may produce an offset or two, it will never increase in height. The scion, on the other hand, is a shoot cut from a plant or sprout from which roots have been cut off and which is inserted upon the stock. Care should always be exercised that the stock be such that it may sustain the graft for a long time. If it is weak or lacking in moisture, the scion will not get enough nourishment and will fare rather poorly, eventually drying up entirely.

By grafting it is possible to produce marvelous results in a relatively short time. By this means it is feasible to "step up" or accelerate the growth of grafted individuals fully a year or more in advance. Likewise it aids certain delicate and weak growing

types to gain a greater grip on life which they could not acquire if grown on their own root. By this method one is able to preserve those cactus varieties which are susceptible to a rot disease due to their parts coming in contact with too wet soil. Grafting also aids tiny seedlings to attain maturity much faster than if allowed to grow in the soil; to save such contaminated plants, which when cut to the healthy tissue, would be impossible to grow as a cutting because of the much reduced plant portion; to insure a greater number of flowers; to develop bushy and more decorative plants; and to preserve abnormal forms, such as crests and monstrosities, which oftentimes are much harder to grow on their own root system and still harder to propagate by any other means. There are various other reasons for the fusion of cactus plants, but these cover the principle purposes.

Even though the process of grafting is very simple, it will be well for the beginner to have some knowledge regarding the plants involved and the methods used. Plants that are to be used as stocks must be in a vigorous growing condition, i.e. healthy, full of sap and owning a good root system. Of course, there are exceptions to this rule, but beginners are advised to try nothing but healthy stocks for their first grafts.

Grafting is best accomplished during the spring and summer months, preferably April to September, when the plants are growing well. I have made successful grafts in all seasons but for the beginner grafting is not recommended during the fall and winter months, because it will take much longer for the plants to unite and begin growth. Only when it becomes necessary to save injured or diseased plants should grafting be resorted to in the unfavorable season.

In cactus grafting there are three chief kinds of grafts commonly employed—the cleft, side and the flat. All thin-stemmed plants are suitable for cleft grafting while the thick and globose types require a flat graft. Directions for both of these methods are very simple, including the side graft.

*Cleft grafting.* In the cleft type of graft, cut back stock to a desired height, usually 6 to 12 inches is preferable, and then make a slit at the top about an



inch deep. The slit should be V-shaped and never much longer than the insert if a perfect union is to be attained. The stem of the scion is then cut on two sides to form a wedge and inserted into the split of the stock. After firming the graft into the desired position, the scion is held in place by running a spine or two through the united portions and then closely wrapping cord should be taut enough to hold the scion in place and yet not so tight as to cut into the stock. The use of wax is not required in cactus grafting.

The side graft is even easier than the cleft and it can be used for the slender varieties. In this case, make a diagonal cut on both the scion and stock, fit the joints together and hold in place by inserting two spines. Immediately after wrap with a rubber band or string and apply a splint, if necessary, to hold the joints firmer.

**The flat graft.** When using the flat graft both scion and stock should be of approximately the same width at the intended union. After selecting the two plants make a smooth transverse cut on each specimen and then place the scion on the severed stock, pressing the two flat surfaces firmly together, and finally applying any of the following methods to hold the graft in place. Two large sized rubber bands placed gently over the top of the scion and run underneath the flower pot will insure tightness. String can be used in the same manner but be careful that it does not mash or injure the graft in anyway. Heavy-textured cacti will stand much more pressure than soft flabby kinds. To prevent the rubber bands or string from slipping, file or cut four equal grooves on the flower pot rim, as well as on the bottom, and then run the bands in the notches and over the plants to secure the graft in position. It will be a good idea to place a piece of cotton or cloth over the scion where the binding material is apt to cut into the plant. There are many methods for holding the scion on the stock and only by experience will a definite method become suited to the individual's taste.

One method to hold the grafted plant in place is to take a piece of strong flexible wire, bend it into the shape of the letter "U" and then inverting it (so that the bent portion will come over the plant) anchor it into the soil. Cut surfaces have a tendency to shrink or contract and since even pressure is of paramount importance while the portions are knitting it will be wise to hammer the wire prongs deeper into the soil

on daily inspection. Another simple way of holding a flat graft in place is to suspend a clean flowerpot over it with a weight atop the inverted flowerpot to insure pressure.

When all grafting operations are completed put the plants in a warm, semi-shaded place, but where air circulation is good, so that the cut surfaces will not dry up too rapidly, preventing perfect unions. The stock should be watered, preferably by immersing in a pan of water, but never permit water overhead until the graft has completely healed. Inspect all grafts regularly to note whether the union has formed properly. Spines and other holding devices can be left for about a month. It is wise to leave the supports on a little longer than to withdraw them too soon.

**Selecting the right stock.** Some information in regards the choice of stocks, which ones are most acceptable, where to get them and how to manage a steady supply for reserve will be welcome. The best stocks are those of the *Cereus* group, especially those that produce sturdy, upright growths in relatively short time. Among the best is the genus *Trichocereus* with several good species. Its members produce stocks that are exceedingly ideal for flat grafts and their stems, when cut transversely, present a large round surface upon which various globular cacti can be set with utmost ease. The genus *Cereus* also has a goodly number of forms suitable for flat grafting. The broad-leaf or orchid cacti, known botanically as *Epiphyllums*, produce enormous growths on *Cereus* stocks.

Other genera frequently used for stocks include *Lemaireocereus*, *Selenicereus*, *Nyctocereus*, *Acanthocereus*, *Harrisia* and *Hyllocereus*. The pendent cacti, like the rattail, peanut, pencil, mistletoe and crab, are usually cleft-grafted upon elongated stems of *Hyllocereus*, *Acanthocereus*, *Eriocereus* and *Selenicereus*. The Christmas and Easter Cactus produces immense spreading umbrella-like heads of bright green joints and a blanket of bright colored blossoms when grafted upon *Pereskia*, the most primitive type of the cactus family. The slender-branching *Rhipsalis* or Mistletoe Cactus likewise seems to prefer *Pereskia* stems to any other.

The genus *Opuntia*, in my estimation, contains but a few species satisfactory for use as grafting stocks. Probably the best is *Opuntia subulata* with thick, almost cylindrical stems, ideal for *Zygocactus*, *Rhipsalis*,

*Continued on page 96*

## Two Unusual Cultivars of *Mammillaria bocasana*

By P. C. HUTCHISON\*

A large number of cultivars of certain species of Cactaceae prove to be of exceptional horticultural merit. In the past, few of these have had particular attention called to them as horticultural varieties; the use of cultivar names is practically unknown in this family except in *Epiphyllum*. However deviants from average or previously known morphology are often described as new taxa with Latinized names. Emphasis has been given to flower color, spine color and morphology and to habit of plant (i.e., solitary versus caespitose) in establishing

many of these new taxa, yet in many species of cacti these characteristics are highly variable from plant to plant in populations in the wild. In other cases distinguishing characteristics prove to be phenotypic. The various Latinized forms of the adjective "cristatus," for example, are often attached to the Latin binominal of a species to indicate fasciated or cristate growth. Two points can be made which make such usage inadvisable. First, the term cristate is inadequate alone, since such an abnormal growth from a single clone may develop and maintain entirely different morphology from later or previous monstrose growths from the same clone. Thus one term may be applied to several differ-

\*University of California Botanical Garden (Berkeley) Contribution No. 133.

ent types of bud-mutations originating from a single clone. Second, the "Proposed International Code of Nomenclature for Cultivated Plants" in Appendix III of the International Code of Botanical Nomenclature, 1952, specifically distinguishes between use of the terms "variety" and "cultivar" (cf. Article C. 5)—"A *cultivar* (abbreviated as *cv.*) is a variant not known to occur in the wild or not known to have an equivalent in the wild in sufficient numbers to justify botanical recognition, as distinct from a variety, which is a wild variant warranting botanical recognition. In horticulture cultivars are often referred to as "horticultural varieties" or simply "varieties" but it is best to reserve the term "variety" for wild variations." Article C. 17 states, "From January 1, 1953, onwards the cultivar name of a newly described cultivar (i.e. new or hitherto unnamed cultivar)

should be a vernacular or "fancy" name (i.e. one in common language) and markedly different from a botanical epithet."

It need scarcely be noted that the conservative use of the term "variety" in accordance with the foregoing definition, to say little of a conservative use of the concept of "species," would make unnecessary the change of status of many of the newer taxa in the Cactaceae to cultivars or, in many cases, their reduction to synonymy.

*Mammillaria bocasana* "Morgan's Cristate" originated as a bud-mutation of a typical *M. bocasana* in the collection of Dr. Meredith Morgan, Sr., of Richmond, California. Areoles are enlarged and densely pilose. Early growth is monstrose and in age a crest may form. Monstrose areoles may lack the hooked central spine which is typical of this species, but these are usually visible, although reduced in size, in the

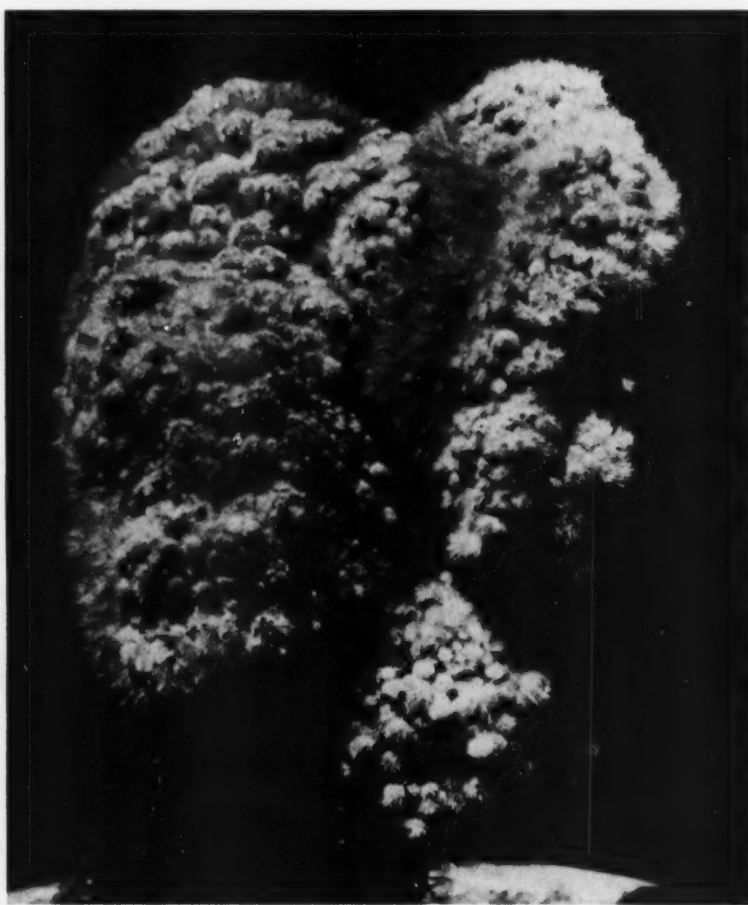


FIG. 53. *Mammillaria bocasana* "Morgan's Cristate." Nat. size photo by author.



FIG. 54. *Mammillaria bocasana* "Edward Hummel." Nat. size photo by author.

longer, more densely matted hairs along the meristem of a crest, as is shown in the figure. This cultivar may develop a completely random shape with meristems scattered irregularly, or it may form the convolute pattern of most *Mammillaria* crests. It grows best as a graft and *Trichocereus spachianus* has proven an excellent stock. The causes of this type of growth are not well understood, at least so far as Cactaceae are concerned. Here at the University of California Botanical Garden (Berkeley) we have suspected that such abnormalities may be initiated, at least in part, by use of certain chemical sprays. Dr. Morgan has found that he can sometimes cause monstrose growth to form on certain species of cacti by wounding meristems, irradiation, or use

of cholchicine, followed by forced rapid growth.

*Mammillaria bocasana* "Edward Hummel" is a seedling variation noted by Mr. E. C. Hummel, Sr., of Inglewood, California, among his extensive stock of this species. He has propagated this clone extensively for introduction to the nursery trade. It clusters early and densely and soon assumes a mounded columnar or almost conical shape. The individual stems are tightly packed against one another and never seem to grow as large as a typical normal plant of *M. bocasana*. It should be grown in strong light else its distinctness tends to be lost. However average plants of *M. bocasana* have never been observed to assume this particular habit regardless of environment.

## LOPHOCEREUS SCHOTTII

By G. E. BARRETT

Dear Henery. By this time you will have got that box of funny cactus which I sent you. Its the same stuff them rich folks up in Hollywood plant in their dooryards and think its pretty. Now I want you to take special notice of that tall star shaped cactus, I mean the plant which has the long white bristles instead of spines, thats the kind I had so much trouble findin, and Im' goin to tell you just how to find it so as you can git it yourself next time cause I am through with that country.

Well you remember that old flivver I used to drive? I takes the fenders off, also everything else what wasent necessary to make it go, then I fits the wheels with the biggest tires in town.

I puts big gas and water tanks on the runnin boards cause I knew by the maps that there want many gas stations in the country where I was goin.

You will remember the Professor said this special kind of cactus didnt grow in the U.S. but that it came from way down in Mexico, he called it *Loco serus schottii*, or something like that, but old Uncle Bill told me he seen cactus with long white hair instead of spines, and he seen it on the border right down in Arizona, course that was back in the 60s but it might be there yet and I was goin to find out.

Well I loads the old flivver up with enough necessities of life to last a couple of weeks includin gas enough to take me to South America. The neighbors all thought I was crazy as I steamed down the road with that apparatus, you see I had took the muffler off, and had changed the gears so as it could climb better, and it was a plenty noisy machine.

I wont bother you none with the details of gettin over into Arizona cause it was just plain

sailin over regular roads. But after I gits over to the middle of the state I hits a little burg without no name I turns south and leaves all civilization behind. I travels for a half day over a old road what leads to a empty copper mine up in the hills. This mine bein the end of the road I simply takes off in a southerly direction as the sailors say. I knew that it was a good 50 mile to

the border yet, and that goin wasent any too good, so I just takes my time dodgin around through sage brush and cactus headin as near south as the lay of the country would let me.

There was a broad level valley headin almost in my direction so I follows it many miles, sea-sawin back and forth dodgin cactus and brush, sometimes havin to turn back a ways to git acrost some arroyo. (which is a creek without no water).

Toward sundown I seen a big lake ahead and not knowin just how I was goin to get around it I made camp for the night. Guess I forgot to mention I had took my big airdale dog "buck" along for company, which I sure needed that night for I had camped in the lonest place in the world. I didnt know it could be so still, not a bird or a bee within miles.

If you ever need a quiet place in which to recuperate just go down there and absorb it. I musta been considerable worried about

gettin acrost that lake cause I dreamed about it that night, seems that I was tryin to go over the water with them big tires and that I got stuck, and I got drowned several times before mornin. I was much relieved when I woke up and seen the car still there and that I was still alive. I gets a early start toward the lake where I was goin to fill my tanks and try to find some way round it. Well sir when I got down to that lake

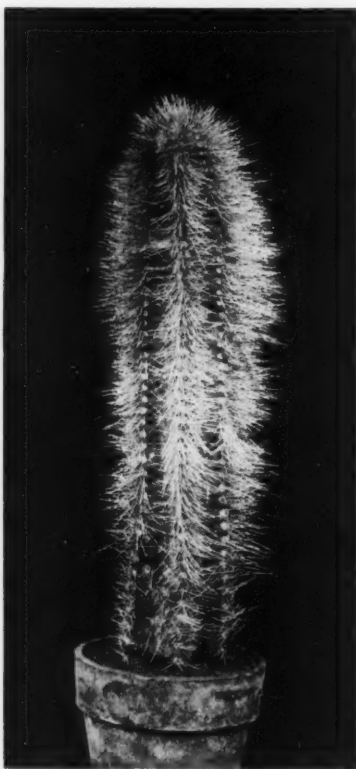


FIG. 55  
*Flowering branch Lophocereus Schottii*

I gits the biggest surprise of my life, it want no lake at all, that is there want no water in it, it had all dried up. I drove right out on the lake bed and found it was as smooth as glass and as hard as cement.

Well even if I didnt git my tanks filled I want much dissapointed for I started traveling right then. Here was one place where there want no speed limit, no cops to stop you, and I sure took advantage of it, it want no time till I was acrost to the other side altho I guess it musta been 20 miles across, course I couldn't swear to the distance cause I had took my speedometer off so as I could carry more water.

The whole aspect of the country had changed at the south end of the lake. All the plants now were new varieties, there was more different kinds of cactus than I had ever seen in one place. There was "prickly pear cactus" with purple leaves what didnt have no spines, but dont never touch em, they got em alright but they keep em hid til you touch em then they jump out at you. (Op. Santa Rita). Then there was another kind somethin like this but had long needle like stickers all over the edge of the leaves. (Op. Macrocentra). Well durin the next few hours I seen more different kinds of cactus than I ever knew existed. There was a cholla cactus what was all red and purple instead of being green. (Op. Versicolor). Then there was the most beautiful barrel cactus I had even seen, it was almost purple instead of being green. (E. C. Covelli). and the ground was covered with great mats of a creeping cholla not over 2 or 3 inches high. (Op. Parrishii). Now I was gettin into the country of the giant cactus also, (Carnegie Gigantea) and another few miles took me into a regular forest of them. I had to do some tall figurin to navigate the car through this district, but finally hit on the plan of driving up a dry creek bed where there wasent no plants growin. This forest of giant cactus reminded me of bein in the pine woods, when the wind blew through the spines on em, it sounded just like the wind goin through pine needles. They was about as tall as pine trees and so close together that it was almost shady.

Late that afternoon I lets Buck out of the car to git some exercise and he want out 5 minutes till he started a scrap with something or other, so I grabs the gun and went off in the brush where he was raisin such a rumpas, from the noise he was makin I thought he had found a elephant or somethin.

I finally gits there and can you believe me he had "treed" the biggest bob cat I ever seen. At any rate you would call it "Treed" in your country, but there want no trees in this country so the old cat done the next best thing, he took to

one of them giant cactuses. Can you imagine a big cat climbin to the top of a 40 foot cactus. The cactus has 3 inch spines sticking out in all directions and they aint over a half inch apart either. Still there was our cat standing on the top lookin first one way then the other, and spittin at the dog. Well sez I to my self "heres

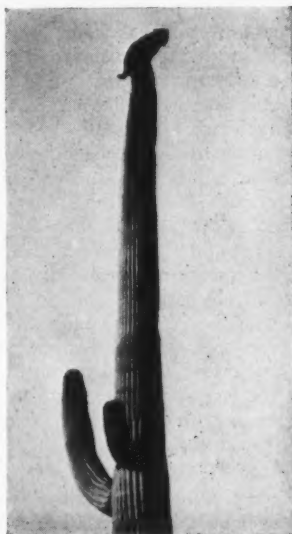


FIG. 56  
"Pictures don't lie"

a chanst to git a real photograaft," somethin folks dont git to see every day, so I trapes back to the car and gits my picture takin apparatus, leavin the dog to keep friend cat on his roost. Well I takes a couple of snaps at him from different positions to make sure one of em would be good, and I am enclosin you one of em just to show you I aint exaggeratin any about this. What became of the cat? Oh yes—his fur adorns the coat of the Missus. You see them cats is considered undesirable citizens, they kill deer, young stock, and do lots of damage, so I figured the world would be better without his presence, besides old Buck was just dyin for a scrap, so with a little time and plenty of rocks I succeeded in coaxin him off the cactus and you should have seen the mixup, I tried to git another picture but there was too much action. Buck gits his nose pretty well chewed up but finally wins the argument so I skins the cat and we are on our way.

Now I was slowly wendin my way back and forth through the giant cactus. Who said the desert was barren? There was more kinds of plants here that I had ever seen in one place.



The palo verde trees here was absolutely beautiful, the bark of em is bright green, there seemed to be two different kinds, one kind had the tinyst of leaves, and lots of thorns, while the other had smaller leaves and lots more thorns. (*Parkinsonia Torreyana*) and (*Parkinsonia Microphyllia*). Many of the plants here was in bloom which made one think of some tropical country instead of bein the desert. The creasote bushes had assumed giant proportions and beneath them was the daintiest of mamillarias. (*Mam grahami*) and there was clumps of that so called hedge hog cactus (*E. C. Engelmanii*) which I sure had to look out for on account of my tires. Even the different chollas had got to be tall as trees and say didja ever notice how much more it hurts when you git stuck by one of them chollas than other cactus, well I found out why, I examined their stickers under the microscope and found that the cholla spines has all got barbs on em just like a fish hook and when you pulls em out a little chunk of flesh comes with em, and this goes for every kind of cholla that I have examined yet, so whenever you insist on getting stuck by a cactus pick out the smooth spined kind, they extract better.

Well I am gettin away from my story, it would take a book to tell you all about the different interestin plants I seen on this trip so I will have to content myself with just describin the most prominent ones. What struck me most was so many different kinds of the flat leaved "prickly pears" there was green ones, yellow ones, purple ones, red ones, and lots of other flavors, all havin different kinds of spines. Mind you I was travelin in "low" most of the time now, the main reason for this bein that I "had" to, the goin was so hard, but it gave me a chanst to see a lot of things Id never seen if I had gone any faster.

When I camped that night I had no more idea than the "Man in The Moon" of where I was. Not havin no sextant nor thermometer or nothin, I had no way of taking my bearings, so had to go by dead reckonin. Judgin from the ammt. of gasoline I had used I figured I must be near Panama, but there was still plenty in the reserve tank so I want worryin none.

Next mornin I drives a long time on good hard ground where there want no vegetation to hinder progress. This took me up over a low divide into a different lookin country which was more like the desert again, and in the middle of the day I comes to another of them arroyos' again, which was a real deep one this time. The sides of this was straight up and down, while it want no more than 20 feet acrost it musta been about that deep. I follored that thing for miles tryin to find a respectable crossin but all the

places was too steep, till I finally comes to a place where it looked as if stock or somethin had been goin acrost. Here I gits out and used the shovel a long time cavin the bank off till I had what looked like a fair crossin, and it was here that the fun begins.



FIG. 57  
Thar she blows—*Lophoceros schottii*.

I puts the old flivver's nose over the bank and starts sliding down, it was so darned steep I thought we would tip over, end for end, but gits to the bottom right side up, but when I starts up the other side it was different, you see the banks of that thing was just pure soft sand, while I had power enough, the wheels just spun round, and puttin chains on just threw sand a half mile and dug me in deeper. I gits out the block and tackle but no man can pull a rope and drive a car at the same time. Old Buck tries to help, he gits out and barks at the engine, and bits the tires, then goes up the bank and howls knowin that somethin was wrong. Well it was a mechanical impossibility to git that machine out of that place, and there want nothin to be gained settin there lookin at it, so I does the next best thing by turnin the flivver down that dry creek bed and starts off hopin that I would soon find a better driveway leading out.

And here I travels mile after mile shut in that narrow canyon, not much wider than the car, there was one advantage about this, I didnt have to dodge anything, I coulndent there want room to dodge a flea, I took em as they come, rocks, brush, cactus and all. Well sir I drives down that creek bed all the rest of that day, most of the time goin real slow, the rest of the time goin a whole lot slower, once in a while I climbs to the top to see where I was, but everything looked the same from every viewpoint, and of course when night comes I camped right

where I was, and I want worryin none about obstructin traffic either. Next mornin my highway begins to git wider, and the sides want quite so steep nor high, and soon I was able to see over the top while drivin, and off in the distance I seen a clump of green trees with a trace of smoke comin through em, and soon I seen several doby buildins was there.

By this time the arroyo was shallow enough so that it was easy for me to cave off enough bank to drive out and in a few minutes I was stopped at the little desert ranch houses, surrounded by a bunch of the barkiest dogs I ever heard.

A old Mexican comes out and we begin a very interestin conversation, he couldnt talk a word of United States, but I could talk good Mexican, I onct took a correspondence course in it and got a certificate to prove it. Anyhow he couldnt understand any of the language I had learned.

Well after a half hours jabberin and sign language I gits the information that I was 25 miles south of the U. S. boundary line. So I decides right then and there that I had better be headin back north cause Mexico was having one of them revolutions and I was in their country with guns on my car, and havin no permit or nothin I knew it would be unhealthy for any soldiers to find me there, so I fills my water tanks from his well and heads the flivver back north.

Not carin to follow the same highway back that I had come in on, and the country bein fairly level I starts off toward the northwest headin for a low range of hills, and the country bein quite free from brush I made good time.

I seen a big wart like hill out in the middle of this flat desert, so drove over to it to see what kind of plants was growin on it. Of course even if I did find any plants there that interested me I couldn't take samples with me cause it was in Mexico. But there want no law again takin pictures.

Well sir the top of that hill was simply covered with the very cactus I was lookin for. "Lopho Cerius schottii." The stalks on some of em was 12 feet tall, and most of them clumps had 20 to 30 stalks. It was the most beautiful cactus I had ever seen, the taller stems bein completely covered with the long white hairlike bristles, while the shorter stems had small sharp spines like common cactus.

I had one of them automatic jiggers on my camera, so I could take my own pictures, so I sets the camera and winds it up and gits up by a bunch of that cactus and takes a photo of my self. a copy of same photo is enclosed to bear out my statements.

It sure made me sick to think that after all the miles I had traveled to get some of that cactus that it was in Mexico. Course I spose I coulda

loaded up a bunch of it and said I had found it in the U. S. but my conscience would be ruined the rest of the trip, it wouldn't of been sportsmanship, twold be like a feller cheatin at solitaire.

As I was leavin there I seen a big white gravestone at the south end of the hill, and wonderin what crazy chump was foolish enough to git buried there I went over to see what writin was on it, here is what the epitaph was, "U. S.-MEXICO 371." I was in U. S. after all, my sperits went up right then, and I got real busy gettin some samples of that cactus into my car. I didnt dig up any of them plants, but simply cut off the branches I wanted. You see the branches will put out new roots in no time when planted in sand, so there want no use in cartin a lot of roots home, so in most no time I had all the cuttings I wanted and was ready to start for home. I aint goin to bother you with all the details of gettin back to the highway, altho I must tell you one funny experience.

The day after I had found my cactus I had traveled over some terrible rough country and had drove far into the night, I was also considerable worried because my gasoline was gettin low, I had been travelin in "low" for hours, and when I camped that night I was pretty blue figurin that I might have to finish my trip afoot. Well I was awake in the morning by a car goin to beat the band, and lookin up I saw this car was goin down a fine highway, and there was my tracks running parallel to this highway for mile after mile. Thats what a feller gits for drivin at night in a strange country.

GEO.

P.S. The plant names are mine so don't use them.

ED. NOTE: The previous article is being reprinted from Vol. I of this JOURNAL, twenty-six years ago. It attracted considerable comment during that untroubled period and the lightness of it may arouse a smile even today. We wish to call attention to Fig. 56 and request an apology from Walt Disney, the great artist who is giving us those priceless pictures as "The Living Desert." One of the feature shots in his moving picture is a wild cat climbing an Arizona Giant Cactus. We published a similar shot taken 26 years ago only our cat is shown nestled comfortably among the cactus spines whereas his cat is as uneasy as our age. The cover jacket of Disney's book, "The Living Desert" also shows a fine picture of the same subject. If you do not have this book, be sure to get one from us. It is in color and the highlights of the film are described in a most entertaining maner. Every desert lover will be fascinated. Price \$3.15. Abbey Garden Press, 132 W. Union St., Pasadena, Calif.

#### CEREUSLY SPEAKING

The regular page of John Rodgers arrived too late for this issue but it will appear in the July JOURNAL.

#### QUESTIONS AND ANSWERS

We know that our readers look for this page in every issue. Send your questions to Harry Johnson, Johnson Cactus Gardens, Paramount, California.



FIG. 58. Entrance to Hidden Valley in the Joshua Tree National Monument.

### A FIELD TRIP TO JOSHUA TREE NATIONAL MONUMENT

By MARY GLADE

On May 1, of last year, a field trip to the Joshua Tree National Monument was sponsored by the Cactus and Succulent Society of America, Inc., for its members. During the two days forty to fifty people made the trip.

Several cars arrived at the Hidden Valley campgrounds on Friday evening. The members either slept in tents, station wagons or cars. Many of the members did not arrive until Saturday evening. The one unpleasant feature of the trip was that a strong, cold wind blew all of Friday night and the greater part of Saturday.

After a large group had enjoyed a hearty breakfast, they decided to hike over to Hidden Valley about a half mile from the camp grounds. A huge stone shaped like a bird appears to guard the outer entrance to the tunnel by which the valley is entered. Hidden Valley is said to have been a favorite rustler's den during the cattlemen days.

Inside one will find a stone Trojan warrior and across the valley to the west a stone bull seems to recline on a rocky abutment. Once inside, a cactophile can find a number of species of cactus such as *Opuntia ramosissima*, *O. echinocarpa*, *O. chloritica*, *Echinocereus mojavensis*, and *E. engelmannii*. There are also many beautiful specimens of *Nolina bigelovii* var. *wolfii* growing among the rocks. Of the many wild flowers in bloom one of the loveliest, in my opinion, was a rock-loving *Pentstemon*.

While our group was inspecting Hidden Valley, some of the members took other side trips. One group visited Inspiration Point or Salton Sea View. From this spot, 5185 feet above sea level, on a clear day one may see Palm Springs, Travertine Rock, Salton Sea, the Superstition Mountains and Signal Mountain across the Mexican border, 95 miles to the south.

Before returning to camp for lunch our group climbed a hill which had beautiful specimens of *Ferocactus acanthodes*, *Echinocereus engelmannii* (the variety with beautiful black spines), and at the top of the ridge we found many plants of *Dudleya grandiflora*.

After lunch it was decided to form a caravan and make a half-circle of the northern section of the Monument. We were fortunate in having Dr. Lyman Benson, Prof. of Botany at Pomona College, join us on this trip. He had given all of us a list of the plants that might be found in the Monument. During this trip we visited Coyote Hole Canyon. In this section one may see Indian petroglyphs scratched on the rocks on the sides of the canyon. The canyon is well named as our group found the remains of what looked like a coyote.

On the northern part of the trip we went through the town of Joshua Tree. Between the towns of Joshua Tree and Twenty-nine Palms we took the side road taking us through Indian

Cove. In this area one will find camp grounds. Some of the plants in here of interest to cactus lovers are *Yucca brevifolia*, *Y. schidigera*, and *Ferocactus acanthodes*. On a moonlight night we were told one can see the rare Bighorn sheep.

The cars in the caravan stopped at Twenty-nine Palms for gas. When Colonel Henry Washington, conducting a government survey party toward the Mojave Desert in 1855, came to an Indian Camp near an oasis guarded by 29 palms (now reduced to 21) he named the spot accordingly. The Joshua trees, *Yucca brevifolia*, which grow abundantly in the Monument and on the slopes along the Twenty-nine Palms Highway, bloom in early spring. They were named by the Mormons, who saw in the outstretched branches, friendly arms heralding their approach to the Promised Land.

From Twenty-nine Palms, the caravan started back towards our camp. On the way one may take side roads to see Split Rock and Ivanpah Tank. The tank is one of those constructed by early cattlemen to catch rain water.

After a hearty and enjoyable supper we all gathered around a big campfire. Among us was Dr. Benson. He gave us a wonderful talk on how the desert and mountain ranges came into being. The camp didn't retire to bed until after 10 p.m.

Breakfast on Sunday morning was rather a drawn out affair as we had to pack everything in

order to break camp. A caravan was formed to see new areas on our way out of the Monument. A number of stops were made along the way to see clumps of *Opuntia parishii*; to photograph beautiful clumps of *Echinocereus mojavensis* in bloom; and to view a large plant of *Coryphantha alversonii*.

The caravan proceeded past White Tank rocks, on down the road towards Pinto Basin. Through here we came to the Cholla Cactus Gardens—a large concentration of *Opuntia bigelovii*—and farther on we passed many large plants of Ocotillo, *Fouquieria splendens*, which happened to be in bloom. In one wash through this Basin one can see many Smoke Trees, *Dalea spinosa*. These trees, sometimes called "gossamer ladies of the washes" appear as clouds of smoke at a distance. In June they are smoky with blue flowers.

After leaving Pinto Basin the caravan decided to drive on to Cottonwood Springs. There we found a nice camping area with Washington Palms, Cottonwood trees and a natural spring where campers obtain clear, cool drinking water. The members of the caravan enjoyed their last picnic lunch together here. After lunch they decided to go home their separate ways.

In conclusion I wish to say that everyone seemed to thoroughly enjoy himself on this camping trip. It was decided that we should have more of the same in the future.

### SOME FACTS YOU SHOULD KNOW ABOUT THE JOSHUA TREE NATIONAL MONUMENT, SOUTHERN CALIFORNIA

By Presidential proclamation on August 10th, 1936, The Joshua Tree National Monument was established as a unit of the National Park System, for the express purpose of preserving for the public, and especially for that portion of the public who loved the desert and remote places, a large area of scenic high desert country, so the visitors might see and enjoy the unusual scenery, the strange flora and the fauna of this very different section of their country.

Due largely to pressure upon the Legislators, applied by the mining interests of the area, approximately one-third of the total acreage was eliminated from Joshua Tree National Monument when Congress redefined its boundaries in 1950. At that time, areas known to be chiefly valuable for mining were deleted as recommended by the National Park Service. Moreover the Congress, by its action, confirmed the continuation of the Monument and in Section 4 of the Act of September 25th, 1950 (64 Stat. 1033), made further provision for resolution of the mining problem as follows:

"The Secretary of the Interior is authorized and directed through the Bureau of Mines, the Geological Survey and the National Park Service, to cause a survey to be made of the area within the revised boundaries of the Joshua Tree National Monument with the view to determining to what extent the said area is more valuable for minerals than for the National Monument purposes for which it was created."

In transmitting its report and accompanying surveys

to the Congress in January, 1951, as required by the act, The National Park Service stated its determination as follows:

"that, based upon the evidence and recommendations submitted in the survey reports, Joshua Tree National Monument as reduced by the act of September 25th, 1950, is of primary importance for National Monument purposes, and that the mineral values remaining therein are of little significance, for the following reasons:

"1. For many years prior to the establishment of Joshua Tree National Monument, the areas was prospected and mining claims established in accordance with the mining laws. Many of these claims have been patented and others are still valid where they have been maintained in compliance with provisions of the mining laws. Mining on these patented lands and mining claims is not affected by the act of September 25th, 1950.

"2. Very few of the gold mines within the Monument can be worked profitably under present economic conditions.

"3. A few of the gold mines might prove profitable in times of depression, but in all likelihood these would be small producers.

"4. The possibility of commercial production of base metals, strategic minerals, or important quantities of nonmetallic minerals within the Monument is remote.

"5. There is clear proof that what now remains



under the reduced Monument boundaries contains a variety and wealth of physical, geological and archeological features, as well as exceptional desert flora and scenery and interesting and rare wildlife, such as cannot be equalled in any of our National Monuments within the United States.

"The survey made jointly by the Bureau of Mines, U.S. Geological Survey and National Park Service corroborates the finding of a previous intensive investigation by a fourth bureau, The Division of Investigations of the former General Land Office of this Department. It is also pointed out that before defining the boundaries under the act of September 25th, 1950, very careful consideration and study were given to the extent and selection of the lands proposed by elimination under that in order that the most important mining areas should be excluded at that time. It is believed that this present investigation clearly shows that this was accomplished. At the same time, any remaining active mines and legitimate claims, when in compliance with the U.S. Mining Laws, still retain the rights they had prior to August 10th, 1936."

In 1952, in connection with publicity in the press and otherwise and again in the last few months another move, by these same mining interests, has been made, to have the Joshua Tree National Monument opened for mining and prospecting or to have it abolished completely in order to free the area for such exploitation.

Recently, an organization, known as the Desert Protective Council, was organized by persons who appreciate the desert and can see the value of the continued preservation of the National Monuments for all the people for all time and they are now concentrating all their efforts towards offsetting the moves of the mining interests and other selfish persons who think only of themselves, by writing to their Senators and Representatives in Congress, and requesting that they give full and careful attention and study to these proposals before any attempt is made to have them passed into law.

The Cactus & Succulent Society of America, being completely in sympathy with the aims of the Desert Protective Council, are taking this way of bringing to the attention of their members, the need for concerted action on the part of all persons who love the desert, its flora and fauna.

For further information regarding this matter write to Homer G. Rush, President, Cactus & Succulent Society of America, 820 W. 115th St., Los Angeles 44, California.

P.S. The quotes given in this letter were furnished by courtesy of persons in the United States National Park System and were taken from Public Documents.

#### CACTUS AND SUCCULENT ROUND ROBIN NO. 1

Gladys Panis (Mrs. S. G. Panis, P. O. Box 705, Falmouth, Mass.) has taken over the work of keeping records of all the Round Robins and their members which were started several years ago by Mabel Fay. Quite a job, but there should be a central clearing house for them. Marian Fox has finally succeeded in resting her peanut cactus so that it will bloom. She reports weather of 35 below zero—wonder how she keeps window plants from freezing at such times. Mary Anderson was debating whether to do her re-potting now or wait till time to put her plants outside, when there is no time to repot! Ella Nipper makes wire baskets out of hardware cloth, sinks them in the ground, then fills them with plants in small pots, puts sand in around them and says they go through summer much better that way than when each pot was separately placed in the ground.

MARY KARR, Iantha, Mo.



FIG. 58  
Queen Patricia Moorten wearing the Imperial Crown of "Jeweled Spines" at the 1951 convention.

#### FASHION SHOW

A fashion show of wearing apparel and accessories using cactus and other succulent designs will be a highlight of the gay and colorful Fun Session at the convention in El Paso this July.

Anyone wishing to take part in this show can do so by wearing or displaying such items as dresses, shirts, blouses, jackets, skirts, robes, hats, jewelry, ties, scarfs, etc. These articles can be of all types and kinds of materials, including printed yard goods, ready made or personally made clothing, handicrafts such as embroidery, applique or fabric painting, etc.

Prizes will be awarded for the outstanding entries in each classification such as most beautiful, funniest, most original, etc. There is no limit to the possibilities in this field, so let's all contribute something, men, women and children included.

Many other festivities are planned for the Fun Session. The elaborate ceremony of Crowning the King and Queen will be followed by an unequalled program of surprises and prizes including real "Cactus Juice" and initiation rites that will really be FUN for all.

PATRICIA MOORTEN, *Chairman*.

#### NEW JOHNSON CATALOG

Another fine catalog has recently been added to their long series of catalogs. This one is called "Succulent Parade for the Indoor Gardener—color and interest the year 'round." We are glad to see photos of the Johnson family: Harry and Mrs. Johnson, their sons Hal and Ethan, and Lawrence Gonzales who has been with the gardens long enough to be included in the family team. Each catalog has new illustrations and new surprises in color. Again we say that Johnson Cactus Gardens has done as much or more for the interest of cacti than the promotional work of all of the other commercial growers put together. Their garden has been operating since 1876. Editorially we would like to know who has a complete set of the catalogs of this garden. If you do not have the new catalog, send two dimes to Johnson Cactus Garden, Paramount, California, and your interest in succulents will be renewed. You might mention the JOURNAL and send a question to Harry for his Question and Answer column.



**MESEMBRYANTHEMUM CRINIFLORUM**

People who see a patch of *Mesembryanthemum criniflorum* for the first time, in full sun, can hardly believe their eyes, so dazzling are the colors; so amazing the combinations of pinks and buffs, magentas and rose, crimson, white, yellow and apricot; so brilliant the sheen on glossy petals and the glistening of frosted stem and leaf. They learn that this is the "Living-stone Daisy" from South Africa, one of the "Ice Plants" and a close relation of the "Sally-My-Handsome" that has gone wild in many southern coastal districts and festoons the cliffs of Cornwall [in England]. Enthusiasms wavers a little when they hear that this particular species is an annual, and sometimes collapses altogether when they see how utterly dependent it is on the sun and for how comparatively few hours its full beauty can be enjoyed. But each hour of *M. criniflorum*, I maintain, is worth two of many others, and while I deplore the extra trouble of protecting it from late spring frosts, the annual struggle with slugs that devour its succulent grey-greenery, and its drab and disappointing appearance in wet or cloudy weather, I still mean always to grow it. Never yet have I succeeded in listing all the varieties that come out of a small packet of seeds. Never can I

decide which color is my favorite and whether I prefer the selfs or the tipped and tinted. Because of its small stature, its gay charm and daisy-like simplicity, I have sometimes wished that it did not trail behind it so long and difficult a name (was the synonym *Dorotheanthus* possibly more in keeping with its character?) but now The Royal Horticultural Society's *Dictionary* brings interest and meaning to the whole string of syllables. Apparently the earliest known species of these plants flowered at mid-day, so the name *Mesembrianthemum* was given to the genus, the derivation being *mesembria*, mid-day, and *anthemon*, flower. But, later, night-flowering species were discovered, so the name was altered by one letter and because *Mesembryanthemum*, with the derivation *mesos*, middle, *embryon*, fruit, and *anthemon*, flower, referring, presumably, to the conspicuously central capsule. And this same fruit has its own special interest. Unlike most other seed vessels, this one opens during wet weather—a device to ensure that the seeds are only scattered, in their native dry climate, during the rainy season when they have some chance of germinating. There should be a record dispersal of *Mesembryanthemum* seeds for 1954!—C. R. Falwasser, in *Gard. Chron.* III, 136: 204. Nov. 1954.

**NO GREENHOUSE FOR CACTUS-HATER**

STUFF AND NONSENSE

By DON ROSE

(From a Philadelphia paper)

Anybody building a sleeping porch, or other domestic structure, gets a lot of gratuitous advice from neighbors and visitors. It has already been suggested that the porch should be larger, or smaller, or could be increased to a two story affair with a sun deck on the upper level. Another idea is that a greenhouse might be added to the porch, to be heated by way of a cellar window.

Careful consideration convinces me that I do not want a greenhouse. If I had a greenhouse I would be tempted to keep cactus plants, and I do not care much for cactus plants. And if I raised cactus I would probably join the Philadelphia Cactus and Succulent Society, which holds its regular meeting next Sunday afternoon at the Morris Arboretum, in Chestnut Hill. I do not care much for meetings on Sunday afternoons, not even in the Morris Arboretum.

A certain prejudice against cactus is held more strongly by the Lady of the House, who thinks that a large and crowded collection of cactus looks like a neglected garden in hell. The curious shapes, the spines and whiskers, the octopus arms and tentacles of some kinds of cactus seem out of this world and on the wrong side of the hereafter.

Recently my sister, who raises cactus plants with devotion and determination, gave me a beautiful blossom of a species of cactus known as *stapelia gigantea*, or the giant starfish flower. It was carried downtown to be shown to fellow-laborers in this journalistic vineyard. No single blossom or big bouquet ever caused so much comment en route to Philadelphia. The starfish cactus is large, and its petals are leathery

and covered with fine hair. "It looks," said one fellow-traveler, "like something dreamed up by a mad tailor on Walnut Street." A lady on the train took one horrified look and changed her seat to the other end of the car. Another girl more courageous, inspected it with interest but would not touch it. "I'm afraid it will wrap itself around my arms," she said, "and suck my blood."

The flower went the rounds of the workshop, attracting a lot of attention and frightening women and copy boys. Next morning it was a little faded and flabby. It was laid on the empty desk of a woman reporter, arranged so that its drooping petals seemed to crawl across the desk and reach out for the paste pot. I wasn't there when the reporter came back, but she was not amused.

My sister lives in a house I own, and some years ago I added a greenhouse to it for her convenience. The greenhouse is now stuffed with cactus, and others swarm in the living room and dining room. Hundreds more are in the garden or lined up outside the windows, and winter is coming on. That may be why she thinks I should add a greenhouse to the sleeping porch. A week after it was finished it would be full of her surplus cactus plants.

**SPINE CHATS**

No doubt that our friend Lad is too busy to meet our press schedule. He reports that progress is being made on his cactus book but there will be further delays. He will be looking for you at the Convention.

**GRAFTING ARTICLE**

Myron Kimnach will soon have an illustrated article on grafting. It will be a review of the past methods and include some new angles that have been most successful.



<i>Parodia microsperma</i>	June—Aug.	<i>Epiphyllum stenopetalum</i>	Aug.—Sept.
<i>Frailea grahliana</i>	April—July	<i>strictum</i>	Aug.—Oct.
<i>pumila</i>	April—Sept.	<i>cartagense</i>	July—Nov.
<i>schilinzkyana</i>	July—Aug.	x <i>agatha</i>	June—July
<i>Sclerocactus polyancistrus</i>	April—May	x <i>padre</i>	Dec.—April
<i>Thelocactus bicolor</i>	April—June	x <i>vive rouge</i>	May—June
<i>lloydii</i>	May—July	<i>ackermannii</i>	March—Aug.
<i>pottsii</i>	May—June	x <i>deutsche kaiserin</i>	May—July
<i>uncinatus</i>	April—June	x <i>hermosus</i>	June
<i>Coryphantha arizonica</i>	June—July	x <i>hermosissimus</i>	July
<i>bumamma</i>	June—July	x <i>houghtonii</i>	May—July
<i>clava</i>	May—July	x <i>admiral togo</i>	May—June
<i>elephantidens</i>	May—June	x <i>gloria</i>	May—July
<i>exsudans</i>	May—July	x <i>lohengrin</i>	July
<i>muehlenpfordtii</i>	May—July	x <i>peacockii</i>	June
<i>recurvata</i>	May—July	x <i>hans rehmi</i>	June—July
<i>runyonii</i>	April—July	<i>Macdougallii</i> import No. 186	June
<i>vivipara</i>	May—July	x (old hybrid) Dr. Iwerson	April
<i>Neobesseya missouriensis</i>	March	( <i>Epiphyllum ackermannii</i> x	
<i>Escobaria dasyacantha</i>	March—April	<i>Nopalxochia phyllanthoides</i> ) x	
<i>tuberculata</i>	April	true <i>Epiphyllum ackermannii</i>	May—June
<i>Pelecypophora aselliformis</i>	March—June	<i>Epiphyllum (kinchinjunga)</i> No. 9	June—July
<i>valdeziana</i>	Feb.—April	<i>ackermannii</i> (true)	June—July
<i>Solisia pectinata</i>	March—July	No. 132	July—Sept.
<i>Mammillaria applanata</i>	March	No. 72	June—July
<i>barbata</i>	March—April	No. 112	July—Oct.
<i>bocasana</i>	March—July	<i>pumilum</i>	July—Oct.
<i>camptotricha</i>	March—April	<i>ackermannii</i> x <i>pseudorhipsalis</i>	
<i>candida</i>	March—April	<i>macrantha</i>	Sept.—Oct.
<i>chionocephala</i>	March—May	No. 117	Sept.—Oct.
<i>compressa</i>	May	<i>Pseudorhipsalis macrantha</i> x	
<i>decipiens</i>	Jan.—June	<i>Epiphyllum ackermannii</i>	Jan.—Feb.
<i>denudata</i>	March	<i>Nopalxochia phyllanthoides</i>	Feb.—April
<i>elegans</i>	April—May	<i>Disocactus eichlamii</i>	March—April
<i>elegans</i> var. <i>nigrispina</i>	April—May	<i>Chiapasia nelsonii</i>	Feb.—March
<i>elegans</i> var. <i>superfexta</i>	April—June	<i>Frythrorhipsalis pilocarpa</i>	Jan.—March
<i>elongata</i>	Jan.—March	<i>Pseudorhipsalis macrantha</i>	Oct.—Jan.
<i>elongata</i> var. <i>echinata</i>	Jan.—April	<i>Lepismium commune</i>	Jan.—Oct.
<i>elongata</i> var. <i>minima</i>	Jan.—April	<i>Hariota salicornioides</i>	Jan.—March
<i>elongata</i> var. <i>stella-aurata</i>	Feb.—April	<i>Rhipsalis aculeata</i>	March—June
<i>fasciculata</i>	Aug.—Oct.	<i>capilliformis</i>	Jan.—March
<i>gulzowiana</i>	April—May	<i>cassytha</i>	Feb.—April
<i>hemisphaerica</i>	April—June	<i>cereuscula</i>	Jan.—March
<i>herrerae</i>	April—May	<i>clavata</i>	Oct.—Dec.
<i>heyderi</i>	April—May	<i>crispata</i>	Dec.—Jan.
<i>karwinskiana</i>	March—May	<i>dissimilis</i>	Feb.—March
<i>kewensis</i>	May—July	<i>elliptica</i>	Dec.—Jan.
<i>klissingiana</i>	July—Aug.	<i>heteroclada</i>	Oct.—Nov.
<i>macdougallii</i>	May	<i>houlettiana</i>	Oct.—Nov.
<i>magnimamma</i>	March—April	<i>lindbergiana</i>	Feb.—April
<i>microhelia</i>	April—June	<i>pentaptera</i>	March—April
<i>multiceps</i>	May—June	<i>pulchra</i>	May—June
<i>parkinsonii</i>	April—June	<i>pulvinigera</i>	Feb.—March
<i>phaeacantha</i>	April	<i>rhombea</i>	Nov.—Jan.
<i>phymatotohele</i>	April—June	<i>schaferi</i>	Feb.—March
<i>plumosa</i>	March	<i>teres</i>	Feb.—March
<i>praelii</i>	Jan.—March	<i>trigona</i>	Jan.—Feb.
<i>prolifera</i>	March	<i>tucumanensis</i>	Nov.—Feb.
<i>pusilla</i>	Feb.—April	<i>virgata</i>	March—May
<i>rhodantha</i>	Jan.—April	<i>warmingiana</i>	Jan.—March
<i>rhodantha</i> var. <i>ruberrima</i>	March—Oct.	<i>grandiflora</i>	Jan.—March
<i>schiedeana</i>	March—Oct.		
<i>wlidii</i>	Feb.—April		
<i>Zygocactus truncatus</i>	March—July		
<i>Epiphyllanthus obovatus</i>	Oct.—Dec.		
<i>Schlumbergera bridgesii</i>	Dec.—Feb.		
<i>gaertneri</i>	Nov.—May		
<i>russeliana</i>	May		
<i>Epiphyllum anguliger</i>	Feb.—May		
<i>guatamalense</i>	July—Nov.		
<i>hookeri</i>	April—Oct.		
<i>oxypetalum</i>	June—Oct.		
<i>phyllanthus</i>	July—Oct.		
<i>pittieri</i>	March—Aug.		
<i>pumilum</i>	April—Aug.		
	July—Oct.		

ED. NOTE: This flowering record has been compiled over a twenty year period. The cacti are arranged in the same order as Britton and Rose "The Cactaceae." The names are John Rodger's—some you may not recognize but they are according to names that came with his plants. We are indebted to Mrs. J. F. Nolan for the transcription from Mr. Rodger's manuscript.

#### FORTHCOMING ARTICLES

The next issue of the JOURNAL will contain an interesting illustrated article on collections in the San Francisco area. Few of our readers realize the fine collections centering around the world's best at the University of California Botanic Garden in Berkeley.

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## HOW TO GRAFT CACTI

*Continued from page 83*

various pendulous types and numerous prickly pear varieties. A few thickened flat joints of *Opuntias*, especially the spineless or near spineless forms, are also utilized for grafting purposes, but not to a great extent.

It will pay the individual, who expects to do plenty of grafting in season, to prepare his stocks during the winter months, so that the plants will be well-rooted and ready for use when needed. As a rule, most of the above mentioned plants may be readily grown from slips and if any of the species are in the possession of the cactus collector, he or she should avail himself of all the cuttings that can be secured from such plants.

One need not possess an elaborate outlay of tools to practice grafting. Clean sharp razor blades are most useful, as well as a good knife, and a supply of rubber bands, spines and twine.

To keep a healthy collection of good grafts will require some attention but the little extra sacrifice will repay a hundredfold in the satisfaction it will afford to those who practice this most fascinating hobby. Have you a cactus to spare? How about trying grafting? For illustrations see Haselton's *Cacti and Succulents and How to Grow Them*—50c.

